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GLEANINGS IN BEE CULTURE

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GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS

ILLUSTRATED SEMI-MONTHLY

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W. L. COGGSHALL, p. 226, is called "that 300-colony bee-keeper." When was he reduced to that number? [Of course, that 300 should have been 3000.—ED.]

HONEY-SALVE for sores on horses and other animals: One part each of rosin, honey, and wax, 18 parts fresh lard; melt all together slowly over a moderate fire. So says a foreign journal.

ABBE COLLIN, in *Nahhla*, an African bee journal, is credited with the invention of perforated zinc in 1849. I supposed it was the invention of Hanneman, a German, who at an advanced age is now in Brazil, S. A.

HONEY-DEW is produced late in summer, and on fruit-trees its production depends on the success of the fruit crop. With an abundant crop, no honey-dew: with a total or partial failure of the fruit crop, honey-dew.—*Bulletin Suisse-Romande.*

AFTER READING about karo, p. 226, and what is said about the unusually dull market, p. 224, one feels like asking whether bee-keepers would not get big pay on the investment if they would unite in a campaign of counter-advertising in magazines and papers.

A RUSTY CAN—rusty on the inside—"should not be used under any circumstances," p. 226. How can we tell whether a can is rusty inside? Is it light enough to see? [Very easy, doctor. Hold the can up to the light, the eye about six inches from the can, and you can easily see any rust inside.—ED.]

PERFUME, in honey, is supposed to be due to the flowers from which it is gathered. This is true only in part, says Prof. Seiler, in *Bulletin Suisse-Romande.* The basic perfume is the same in all honeys, no matter from what source, and is a special product capable of manufacture only by the little winged chemists.

YOU CUT a can of honey into 48 bricks, p. 238. Why not 60? [Sixty bricks to the can *could* be cut—no law against it; but 48 makes a better shape for retail purposes, and much easier to cut. The 48 size is as small as is practicable to go. The great pressure necessary to force the wires through the mass would have a tendency to crush some of the smaller bricks, so says our honey-man.—ED.]

G. M. DOOLITTLE, p. 227, thinks bee-keepers were "unwise in rushing into one-pound sections *in advance* of any call for the same from the consumer." That may be a debatable question. If the *total* sales were sufficently increased by the one-pound section, then the change was wise. But I am sure that Bro. Doolittle is right as to the general principle. When some change is made that does not increase the general consumption, only makes people prefer the new to the old, when both are offered, if the new costs the bee-keeper more, the change is unwise.

"MIDWINTER FLIGHTS" are not midwinter flights at all—wish we could have a more correct name. "Winter flights" or "early-spring flights" would be nearer the truth. [There are many of our terms that are not strictly correct; but because they have come to be accepted it does not seem to be practicable to change them. In a comparatively warm locality there will be flights in actual midwinter. Such flights should be provided for, even in January and February, when the outside conditions are such as to warrant it, or so I think.—ED.]

"BUT SAY, DOCTOR, why do bees need moisture," etc., says ye editor, p. 220. Just what I was trying to find out about. As I said in that Straw, A B C says "stir;" GLEANINGS says "Don't stir." Which are we to follow? [The article in the A B C, advising "stir," was written by A. I. R. The item in GLEANINGS, which says "don't stir," was written by myself. We have been

conducting some experiments, which, later on, will be made public. This is true, that a stirred candy permits of the granules rattling down between the frames, and wasting, while a transparent rock candy will all be consumed; for the bees must mix their saliva or water with it, thus making a syrup of their own. It may be that experiments will show that honey is not a good ingredient to prevent graining, because it is easily susceptible to scorching. We shall see.—ED.]

TEMPERATURE of cellar should be somewhere about 45° till the last end of winter, when some say it should be warmer. I do not remember any one saying it should be colder at the last end except D. F. Lashier, p. 239. I wonder which is right. Possibly both. Mr. Lashier gives his bees midwinter flights, after which it may be better to have the cellar cooler; but it may be better to have it warmer if the imprisonment is unbroken. [But should it be colder or warmer? Is it not true that the right temperature at one time is the right temperature at another? The almost invariable temperature in spite of us will be warmer in the spring on account of the warm temperature outside. I have always noticed that the bees are quieter at 45 than at 50 or 55, in the spring. I have noticed, too, that when the temperature goes below 40 for any length of time there is liable to be a spotting of the hives.—ED.]

MIDWINTER FLIGHTS, says D. F. Lashier, need a temperature of as much as 55 to 60, and you, Mr. Editor, prefer 65 to 70, believing that at 45° bees may be chilled and not get back, p. 63. From a good many observations I have changed my views no little. Beginning with your present views, I have come to believe that it is not a matter of exact temperature so much as the kind of day. Feb. 28, at 1:50 P.M., it was 45, calm, with a bright sun. I carried out five colonies. They began flying very soon, and did not cease flying till 5 P.M. at 42°. I *think* no more bees were lost than if it had been warmer. A snowbank was directly in front of one hive; and when a bee lit on the snow, which was rather compact, it seemed to have no trouble in rising again. [I feel more and more satisfied that the thermometer will not be an entirely safe guide as to when the bees may be allowed to fly. Of this I am sure, that a *still* atmosphere is one important condition. The thermometer might show 60 or 65 and a chilling wind, while a temperature as low as 45, with a *still* atmosphere, would be far better for the bees.—ED.]

"WHAT IS HONEY?" If bee-keepers can agree upon a definition there will probably be no difficulty in getting it accepted at Washington. J. A. Green is right in his views, p. 220, and his first definition is good if "from natural sources" includes every thing gathered by the bees that is not directly fed by man, and bars out every thing fed by man except honey. I don't know whether it does that or not. Another thing: As bee-bread is a mixture of pollen and honey, would it not come under the head of "sweet substance"? Possibly it ought to. Don't bees sometimes store water in cells? If they do, "liquid," in his second definition, might not do. But the two might be combined into "sweet liquid." I fancy I can see the twinkle in Mr. Green's eye as he says, "Well, doctor, if you don't like my definition, give us a better one." Don't know enough, Jimmie. [The fact that bees sometimes store water in their cells would not in the least affect Mr. Green's proposed definition. An excess of water in honey would not be regarded by the chemists as an adulteration, for the amount of water varies according to the amount of ripening. If man were to adulterate good honey with water he would spoil it at almost any price, and there would, of course, be no temptation to put it in.—ED.]

SAY, ERNEST, it looks this blessed minute as if it might be warm enough for bees to fly this 8th of March, 11:25 A.M. I'll go out and see. . . It's 35 north of the house, but I don't think that's fair, for there's quite a bank of snow and ice there. North of the shop, where there is no snow, it's 38. It's a bright day, very few clouds, very little air stirring, some snow on the ground, covering perhaps 10 per cent of its surface. Now I'm going to carry out a colony. Don't you wish you were here? . . Well, I took out four. It took them about 5 minutes to wake up enough to fly. No. 234 was a little spotted in front, and the bees were hanging out just a little. That colony did not need 5 minutes to wake up. . . Now 15 minutes since the last one (234) was taken out, and it's flying fairly well—the others not so well. The breeze is increasing more than is pleasant. . . Now 12:25. They've been out 40 minutes, and are making a fairly good flight. Gone up to 39, of course at the shop. . . At 1 o'clock it's 40; bees not flying quite so well. . . At 2:40 it's 42, and bees are flying about a third as much as when at their best. . . At 4:30, at 41°, the hives came in shadow, the bees ceased flying, and were promptly cellared. Ought they not to stand confinement now till May or June? [So far we have not given any of our indoor bees a winter flight, as they have been so quiet, and the outside has been so cool or cold. In the first place they did not need it; and in the second place they could not have had it if they would. Here is the way I see it: Winter flights are necessary when the outside temperature is so high as to affect materially the temperature within the cellar, making the bees within uneasy, consuming largely of their stores and congesting their intestines. When the temperature outside would not permit of flights from fall to spring there is not much need of such flights. But when there are many fine days outside, when the bees might just as well have a flight, the probabilities are that one flight, at least, will be highly beneficial. See editorial elsewhere on this subject.—ED.]

Bees are humming in Texas.

"Cut it out!"—that superfluous drone comb.

Feed your bees if they *need* it, even if it be sugar syrup.

Breed from the best queen in the yard, whether she be pure or hybrid.

"Honey" is the saccharine liquid gathered by the bees from natural sources, and stored in their combs.

If you must have drone comb in your apiary, keep it in your best colonies so that the result will be select drones.

Everybody seems to be trying to define "honey." It is hoped that a satisfactory definition may be arrived at in the end.

Have selected drones in your yard to fertilize your young queens. They will not cost you more to keep than poor ones.

Now is the time to see that your bees have enough stores. They consume more during the heavy breeding season than at any other time.

My thanks are due "Swarthmore" for two copies of a series of "Papers on Apiculture" by that author. The first is entitled "Increase;" the second, "Baby Nuclei." These souvenirs are gotten up in neat style "by hand, in the Swarthmore shops."

Colonies short of stores are fed with the least trouble by simply placing shallow extracting-supers with combs of honey on the hives. Such supers are kept on hand on strong colonies the year round, and come very handy in early spring.

"Bee Pranks," a neat booklet of facsimile newspaper clippings of "bee-yarns," was was kindly sent me by the compilers, the G. B. Lewis Company, of Watertown, Wis. There is a great variety of the funny, droll, humorous, and even the ridiculous. Many thanks.

There are several ways of managing weak colonies. Unite two or more and make one good one, being sure to provide them with a good queen. Or help the weaker colonies along and use them for artificial increase later while the strong colonies are used for honey-production exclusively.

In Stray Straws, February 15, Dr. Miller makes fun of us chaps 'way down South. Why, doctor, I am afraid you have things a little mixed. I feel sorry for you chaps 'way up North. You can never experience the feeling of satisfaction one gets out of going in shirtsleeves outside where the sunshine is bright and balmy; where the bees hum and the birds sing, and where the roses bloom the year round. You see, I've spent this winter here in the North, so I know.

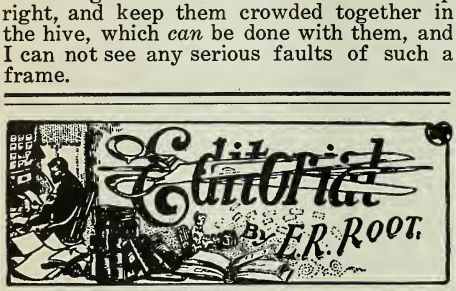
That fellow with the "new and unreliable glasses," in the *American Bee Journal*, pages 136 and 168, comments on some of the St. Louis convention happenings. He gives some good "afterthoughts" to some "forethoughts" mentioned by the writer, at the meeting in connection with an outline of work in apiculture to be taken up at the Texas Agricultural and Mechanical College. Some valuable hints are advanced, and good use will be made of them. More, later, when results are obtained from some of these experiments.

Mr. H. A. Mitchell, of Shepherd, Texas, writes me: "I expect 300 colonies to go into the supers by the first of April. Prospects are fine for a crop of honey this year. We have had a hard winter, but the bees are in fine condition. Weather is fine now, Feb. 24, and the bees are rolling in honey and pollen from maple. Wild peach will be in bloom in a few days; and if the weather continues good we shall be in the swim for a good crop." This comes from a place in the heart of the basswood and holly district of East Texas. He has four apiaries, and runs 200 colonies in a yard. His honey-flows are heavy, crops large, and the quality of the honey is fine. Most of it is section honey, 4½ square; 7-to-foot sections are used, without separators. The flow comes with a rush, and his strong colonies take possession of the whole super at once. This, together with large narrow sections, insures a fancy product of comb honey.

HOFFMAN FRAMES, AGAIN.

It is to be hoped that a decision of manufacturers of Hoffman frames, to abandon the V edge, will not prevail, if such ever existed at all, for square edges are as great a nuisance to some of us as the V edges may be to others. The V-edge frames can be used where propolis is bad, while the square can not. The assertion that there will be no trouble if the frames are crowded close together every time they are handled does not count for much; for where propolis is bad it will roll on to the flat surface, and is packed solid with each successive handling. You can not squeeze in out of the way with

two flat edges, but it can be done with the V-edge frames. These can be crowded together, and proper spacing result—hardly so with the square-edge frames. This difficulty is only increased with the thicker end-bars, which give more surface to the edges. On the other hand, the thick end-bars with the wider edge are a decided improvement in the V-edge Hoffman frame. Nail these up right, and keep them crowded together in the hive, which *can* be done with them, and I can not see any serious faults of such a frame.



THE cold spell seems to have been broken. Unusually severe weather seemed to prevail throughout the country from Feb. 1st to the 20th, when, very fortunately, a warm wave came on, giving the outdoor bees a chance to turn over and seek new brood-nests on honey in the outdoor colonies.

THE reader will notice that this issue contains 68 pages. We have been adding right along 16 extra pages until our regular issue has been 48 pages. Now we are adding 16 more, or 68 in all. We still have on hand a large amount of good copy, which we hope to get before our readers soon.

THE bee-keeping fraternity, especially of the South, has suffered a great loss in the untimely death of Dr. G. W. Rush, of Savannah, Ga., who died recently at his home of pneumonia. Dr. Rush was vice-president of the Georgia Bee-keepers' Association, organized last October at Atlanta. Although still a young physician with a large practice we understand he had laid plans to discontinue his professional work to take up bee-keeping on a more extended scale. He leaves a widow and two small boys, one of four years, the other three months, to whom is extended our sympathy in this time of sorrow.

WINTER LOSSES UP TO DATE.

NOTWITHSTANDING we have had quite a snug winter up till now, March 14, the reports throughout the Northern States are so far quite favorable. There was a time when it looked as if the losses might be very severe in the territory south of the Ohio River; but more favorable weather has come on since, and the bees are apparently recovering from the severe cold wave. From other parts of the country, with a couple of exceptions, we have received no adverse reports.

There has been a large snowfall, and a greater portion of the country where young clover was so promising last fall has been heavily blanketed with snow. Every thing looks favorable for a crop of honey in the East. The conditions in California are still favorable, and the bee-keepers are jubilant.

A GOOD TIME NOW TO MOVE BEES A SHORT DISTANCE.

Now is the best time of the whole year to move bees short distances, providing they have not had a flight recently. If they have been wintered in the cellar they can be placed anywhere in the front or back yard, irrespective of the old location. If they have been shut in on their summer stands for a period of two or three weeks or a month, they can likewise be moved to any place. If cellar bees have had a flight within a week and have been put back in the cellar many of them will go back to the place from which they took their winter flight if taken out in the time specified. Similarly, outdoor bees moved a short distance, if they have had a flight within the week, probably would go back to the old location, many of them being lost.

BEE-KEEPING ILLUSTRATED IN THE PARKS OF NEW YORK.

CONSIDERABLE space has been given in late issues of the New York and other Eastern papers to the matter of appointment of an apiarist for the bees in the city parks of New York. A civil-service examination was lately held, and it appears that Miss Emma V. Haggerty, now a teacher in the public schools, stood highest on the list. Commissioner Schrader, however, declined to give her the appointment, maintaining that the work could be done better by a man. Mr. John H. O'Mara has secured the appointment according to the latest reports from the papers.

In any case the people of New York and vicinity are afforded an excellent opportunity to see the workings of the honey-bee in three of the important parks of New York, and, if we mistake not, these bees will be one of the most interesting features found in the parks. This seems to be something of an innovation in park equipment; and if it proves a success in New York, as we have no doubt it will, it is likely to be followed in other large cities.

MICHIGAN STATE CONVENTION REPORT.

THE attendance at the Michigan State Bee-keepers' convention at Grand Rapids, Feb. 23, 24, was very good. The hall provided by the hotel was so crowded that extra chairs had to be brought in. There was a very good display of foods made with honey, by the National Biscuit Co., and also of the honey exhibited for prizes.

Aside from the question-box discussions, there was some important business transacted which will be of real value to the members. At the convention the year before, they decided to issue a pamphlet in the fall, giving a list of the members having honey

to sell, and opposite each name the amount and kind, with also the style of package. When this came out it had, in addition to the list, much information concerning honey, with some good directions to dealers for storing it; and a few emphatic statements proving the falsity of the stories about manufactured comb honey. About 2000 of these pamphlets were sent out by the secretary and some of the larger producers, to grocers and commission men.

This year they propose to enlarge this pamphlet, giving the entire list of names, with both those that had honey and those that had not, and also a greater amount of reading-matter to make it more complete.

Instead of the convention bearing the expense, almost enough advertising was secured from the different manufacturers and dealers present to pay for the printing.

It was the idea of the convention that a much larger number of these should be sent out, so that still more good might come from it. Mr. York suggested that, if a number of them were sent to the publishers of some of the larger bee-journals, with the necessary postage, they could then be mailed, with a printed letter from the secretary to the entire list of Michigan subscribers. He said that this was done in Illinois recently, and that the association membership was thereby increased by one hundred.

The question-box brought forth a discussion which centered almost entirely on the subject of wintering. The following points may be of general interest:

One man had bees in a tight single-walled hive, with the cover sealed down, and, though the entrance was filled with ice; the bees came through in good order.

Fourteen hives were placed in a cellar, and because they annoyed the people living in the house above, the entrances were stopped with carpet-rags. All wintered well.

Cover the hives with snow, for the bees that are in cold exposed hives will consume so much more honey as to bring on dysentery. There will be little danger of smothering.

If a hive is old, and has not been painted much, sufficient air will pass through the wood to keep the bees. A hundred colonies of bees need less air than the average man.

Put an absorbent packing above the bees, and an air-space above the packing. Do not put oil or enamel cloth under the packing.

Put the best honey in the center of the hive when wintering in severe weather.

The temperature of Bingham's bee-cellar is about 35, though it sometimes goes as low as 30 for several weeks. A damp atmosphere in the cellar requires a higher temperature.

The shock of taking bees out of the cellar in the spring is an objection to cellar wintering.

Propolis makes an excellent flux for soldering lead and copper, and will do for brass and tin, though not for iron.

If a new empty super is put below one nearly filled, the upper one is likely to be left unfinished. When the empty one is above, the filled one below should be taken off before it becomes travel-stained. Swarming is greater when the empty one is put on top.

It pays to remove filled sections in the center of the super when not advisable to tier up. Change the capped sides to the outside in the two outer rows, if necessary. Judge colonies according to their individual conditions. H. H. ROOT.

WINTER FLIGHTS; WHEN THEY ARE AND ARE NOT ADVANTAGEOUS; OPINIONS HARMONIZED.

I AM not sure that there is any thing in the articles in this issue on the subject as above that is not in harmony with what I have advocated in reference to these winter flights except this: That the general opinion has gone abroad that these winter flights are never to be advised. This, I think, is wholly wrong; and in so far as these correspondents may share this opinion I would disagree with them. Mr. Hatch and Mr. Townsend live in a colder climate than we do here in Medina, or that of a large proportion of bee-keepers who winter indoors. So this whole question is one that hinges very strongly on locality. If the temperature of the cellar can be kept at 45 through almost the entire winter, the cellar reasonably dry, and the ventilation fair to good, a winter flight may involve only unnecessary labor on the part of the bee-keeper; but I can not think it would do any harm even then if the bees are taken out and allowed to fly and *return the same day.*

As nearly as I can ascertain, some of our correspondents who have advised against the practice supposed that I have advocated leaving the bees out several days or a week. Of course, brood-rearing would be started if the weather were warm, and there would surely be trouble in the cellar when put back, as soon as the first cold spell came on.

I think we all agree, 1, that a winter flight that involves several days is not only unnecessary but positively harmful; 2, that winter flights are probably unnecessary in cold localities when the temperature of the cellar can be *maintained* at a *uniform* point, and where it does not warm up much if any until it is about time to put the bees out permanently.

But in localities where it warms up much outdoors, as it does here in our locality, the temperature in the cellar is quite sure to vary from the nice ideal of 45 up to 50 and possibly 60. The bees during these rises of temperature are quite apt to be stirred up to activity, consume more than the usual amount of food, and as a consequence their intestines become distended. The remedy is obvious—a winter flight of one day.

I will say to our friend Mr. Townsend that we one winter kept half our bees in the cellar until the time of putting them out. To the rest we gave the benefit of a winter flight about a month before they were set

out. The difference in favor of the last lot of bees mentioned was so noticeable that I feel satisfied our friends would have agreed with me that these bees were in much the better condition.

Now, then, it may seem that I am going to agree with our correspondents. But this winter we have had continually cold weather. The temperature in our machine-shop cellar has varied scarcely a degree. The doorway to the cellar has been open all the time during the last two months. Those bees are all quiet, and from present indications will remain so until the time arrives to set them out permanently. But, understand, we have had a winter that is more like the winters experienced by friends Hatch, Townsend, and Doolittle. There! when we take into consideration the difference in winters and localities I think we shall quite agree.

WHEN BEE-CELLARS SHOULD AND SHOULD NOT BE VENTILATED; DOOLITTLE CELLAR IN PARTICULAR; SHOULD THE FLIGHT OF OUTDOOR BEES BE KEPT UNDER CONTROL?

IN his regular article in this issue Mr. Doolittle rather discourages giving ventilation to bees in a winter repository—advises leaving them alone from the time of putting them in the cellar until the time of taking them out in the spring—at least this is his practice. He does not bring out the fact, however, that *locality* has every thing to do with this question of ventilation.

For years friend Doolittle has been able to maintain a temperature of 45 degrees in his bee-cellar, with a variation of not more than two degrees. There is only one cellar in a hundred that will hold such uniformity of temperature, irrespective of conditions, outside. While the temperature can be kept uniform at the ideal point, 45, ventilation from the outside by means of ventilating-tubes or sub-earth flues would be of no advantage, and possibly might do a positive injury, in that the outside air would so *modify* the temperature in the cellar from high to low that the bees would get stirred up to activity and come out in much worse condition than if they had no ventilation.

A good many of our subscribers in a milder climate, if they were to follow implicitly Mr. Doolittle's practice, would, I think, meet with disaster unless they could have precisely the same conditions he has in his cellar. We have tried repeatedly to winter bees in our locality on the plan Doolittle describes, and almost every time we have lost half the bees, the survivors being so weak as to be practically good for nothing. We recently built one cellar on much the same lines as the Doolittle plan, first without ventilation, and over half the bees died. Why? Because the temperature inside could not be controlled. In our locality we have in midwinter a good many warm days, the temperature sometimes going up to 70. This may last a good part of a week, then the mercury may go down below zero. Experience has shown that extreme cold is not nearly as detrimental as a very warm spell lasting for several days, for this modifies the temperature of the earth so the cellared bees are aroused to an unusual state of activity by reason of the temperature going up to 60 or 65. In the bee-cellar where we have had such good success we have given a large amount of ventilation—had to because the temperature would vary all the way from 40 to 60. The outside air freshens the inside air, and at the same time lowers the temperature slightly.

Toward the close of Mr. Doolittle's article, in the last paragraph, he discourages opening and closing entrances of outdoor-wintered colonies to prevent the flight of the bees. As mentioned elsewhere in this issue we allowed a part of our outdoor bees to fly two weeks ago when the sun shone warm and it was thawing well, and the rest we kept confined. The lumber-yard men reported (and I saw the same thing myself) that the snow for several hundred yards around was dotted with bees that were chilled in the snow, and, of course, would never come back. Obviously, if we had kept the entrances closed those bees that were lost by the thousands would have been saved. Later on when it becomes warmer they can take flight without loss.

Years ago Mr. Doolittle advocated this closing of entrances the same as I have been doing of late. He now doubts whether it pays. The one experiment mentioned convinces me that it has already paid here in Medina. The straw thrown over the entrances does not prevent ventilation. It shuts out the light of an inviting sun when the bees ought not to go out, and prevents cold drafts from blowing into the brood-nest.

No less a man than W. L. Coggshall, probably one of the most extensive bee-keepers in the world, concludes that the strewing of sawdust in front of the entrances in spring is time well spent. If the bees need ventilation they can push the sawdust away; but in the mean time the warm air is confined, preventing the chilling of brood, so vitally necessary early in the season.

But even the outdoor closing of entrances is something that hinges largely on locality. In Vermont and many parts of York State, where there are deep snows almost up to the time of warm weather, the entrances are closed automatically by the snow. Some years ago Mr. A. E. Manum, of Vermont, sent us a photo of one apiary where the hives were almost entirely covered, he himself standing waist deep in the snow. At the time, he reported that this snow was worth to him many dollars in bees and brood that were saved. Well, now, we who live in a locality where there is less snow should provide a substitute; and I know of nothing more available or better than loose straw or old hay—any thing that will shut out the direct rays of light and prevent chilling drafts of air at the entrances in weather too cold for a safe flight.

ROOT'S AUTOMATIC HONEY-EXTRACTOR.

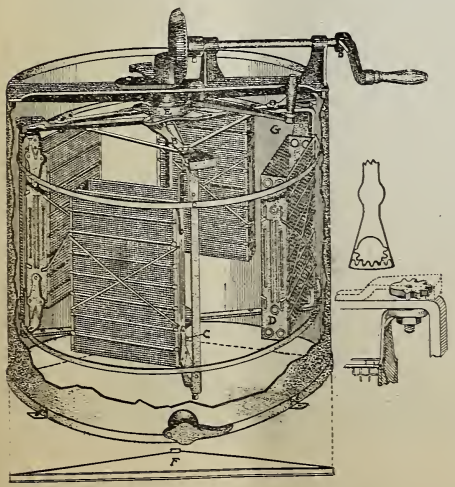
A Device for Reversing the Combs While the Extractor is in Motion, Without Slam or Bang; Running Extractors with a Gasoline-engine.

BY E. R. ROOT.

As previously announced in these columns, the foreman of our machine-shop, Mr. Frank H. Marbach, has invented and perfected a new mechanism for reversing four, six, eight, and ten frame extractors, and that, too, while the extractor-reel is revolving, without any slam or bang of the pockets. After the combs have been extracted from one side, a slight pressure on the street-car band-brake will cause the pockets to turn the combs the other side to so quickly that one is at first nonplused as to how the thing was done so neatly and quietly.

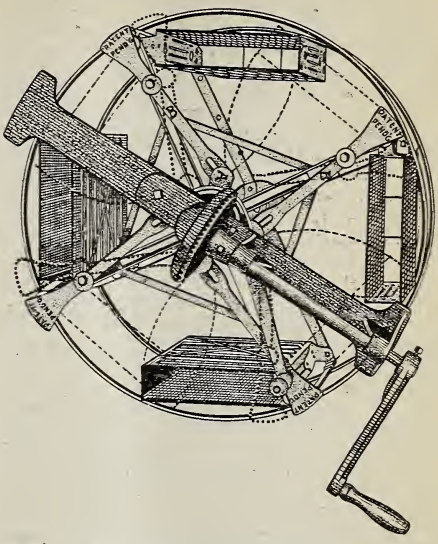
We have seen a great many reversing-devices; have tested many of them, but found them defective in one or more points, and generally complicated. Nor is this all. The mechanism is usually *under* the pockets where it becomes fouled with honey, and where, too, it is difficult to get at it to make the necessary adjustment or repairs. Nearly all if not all that we have seen put almost a breaking strain on the gearing and crank-handle, making the whole outfit short-lived.

The mechanism that Mr. Marbach has devised takes the strain entirely off the gears



ROOT'S AUTOMATIC FOUR-FRAME HONEY-EXTRACTOR; SIDE VIEW.

and the crank-handle, placing it on the heavy brake-hub which is amply strong. A pressure on the brake-lever retards and



ROOT'S AUTOMATIC FOUR-FRAME HONEY-EXTRACTOR; TOP VIEW.

stops momentarily the reversing-hub while the reel continues to revolve on account of the inertia or momentum acquired, causing the baskets to be turned the other side to.

By consulting the illustrations one will easily get the idea. Referring to the side view, with the side of the can cut away, G is the brake-lever; E the brake-band encircling the reversing-hub, already mentioned, with its four arms as at A. On the under side of these arms are downwardly projecting pins which slide in a rectangular slot in the reversing-levers B. These levers are pivoted to the radial channel-arms supporting the reel. On the other end is the gearing, consisting of an internal segment and a pinion, the latter bolted to the hinge of the pocket. The relation of these parts is shown in the small drawings at the right of the side view. The hub just back of the brake-band E, with its radial arms A, is journaled loosely on the extractor-shaft. In a majority of the reversing-devices, the whole extractor-reel with its pockets is journaled on the shaft, making a loose and unstable construction. In the device here shown the shaft is rigidly secured to the reel that holds the pockets and the entire mechanism.

The reel should be revolved so that the hinges follow (not precede) the pockets in the direction of revolution. The machine is then speeded up to full motion; and as soon as the combs are extracted on one side, pressure on the lever G retards and stops the brake-hub loosely journaled on the shaft, causing the arms A A to remain stationary for a moment while the reel continues re-

volving. The effect of this is to cause the reversing-levers B to revolve on the pinion until they reach the points of the dotted lines shown in the perpendicular view, when pressure on the brake-lever is immediately released. The machine is then speeded up, going *in the same direction* as before, extracting the other side of the combs. When the next set of combs are put in, turn the reel in the *opposite* direction and reverse under motion as before. When using the engine to be described it will be found necessary, because the reel must always turn in one direction, to reverse the pockets while the reel is at rest before putting in a new set of combs, then they can be reversed while in motion.

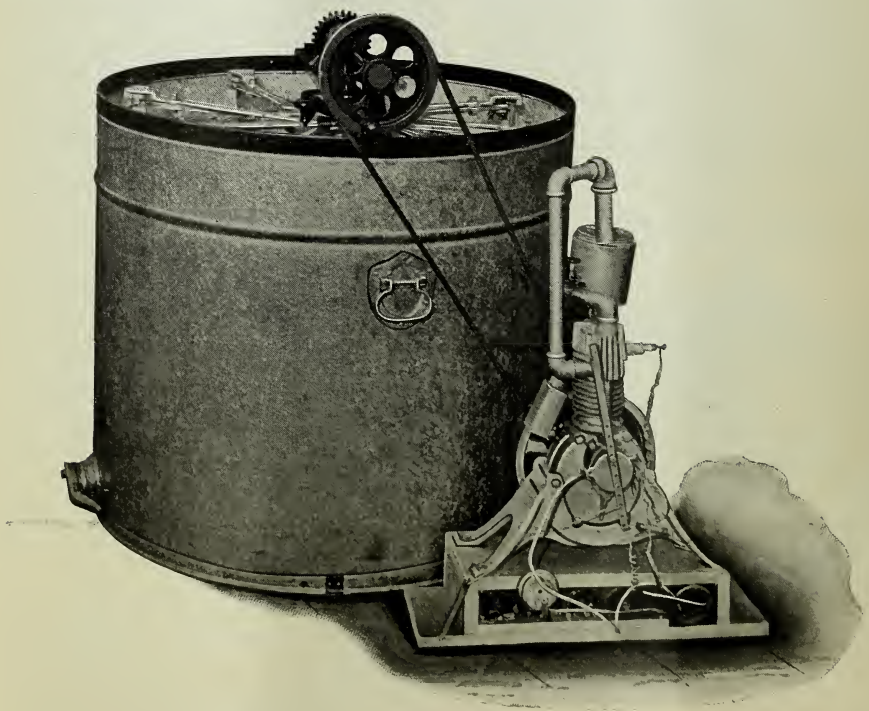
One *can* make the baskets bang in reversing, but there in not the slightest excuse for it if he learns the proper touch on the brake-lever—just enough and no more to cause the pockets to turn quietly to the other position.

Years ago Mr. J. F. McIntyre suggested a principle somewhat similar to this, using reversing-levers pinioned on the radial arms of the reel; but the idea contemplated the use of two spur gears at each end of the reversing arms and a reel loosely journaled on the shaft. As already pointed out, a loosely journaled reel on the shaft is a very bad arrangement mechanically; and, second, a spur gear will cause the end of the arm to project over in such a way as to interfere seriously with the removal and insertion of the frames for extracting. This, in fact, was our original plan; but Mr. Marbach very nicely overcame the difficulty by suggesting the internal gear that causes the radial arm to be pushed back away from the pocket where it can not in the least interfere with the reversing of the combs. But this is not all. It covers up the gearing so that baby fingers or parts of clothing can not be involved.

The reel is supported on a ball bearing so that the extractor runs with a minimum of friction. This bearing is in the cross-arm of the can, clear up away from any contamination of honey. The brake-band, which has been a feature of our extractors in late years, is still retained, and one may use it both to reverse and to stop the extractor.

Perhaps from this description it may seem that this device is complicated; but I may say to our readers that it is as simple as the Cowan, and, what is of considerable importance, it will be longer-lived because the strain is placed *equally* on each of the four pockets simultaneously.

Another feature of this new automatic extractor is the use of steel stampings, steel channel reel-arms—in fact, steel construction throughout except the gearwork; and even these are planed so they work as smoothly as cut gears.



ROOT'S AUTOMATIC EIGHT-FRAME HONEY-EXTRACTOR CONNECTED TO RUN WITH A SMALL GASOLINE-ENGINE.

POWER HONEY-EXTRACTOR OPERATED BY A GASOLINE-ENGINE.

When I was in California in the spring of 1901 I was put into the "harness" by M. H. Mendleson. He made me put on old clothes, and said, "Now, you bee editor, I want you to rub up against a problem, the *real thing*, and then, perhaps, with your factory equipments back of you, you can give us relief."

"I am at your service," I said, and I should say I was, for he put me to turning the crank of a six-frame Cowan. I sweat and puffed and blowed, and then I began to see there was method in Mendleson's madness, for he had the boys working up to a high pitch. Combs loaded down with thick honey from the mountain sage were piled on me so I did not have even a minute's rest. The sweat rolled down in great streams.

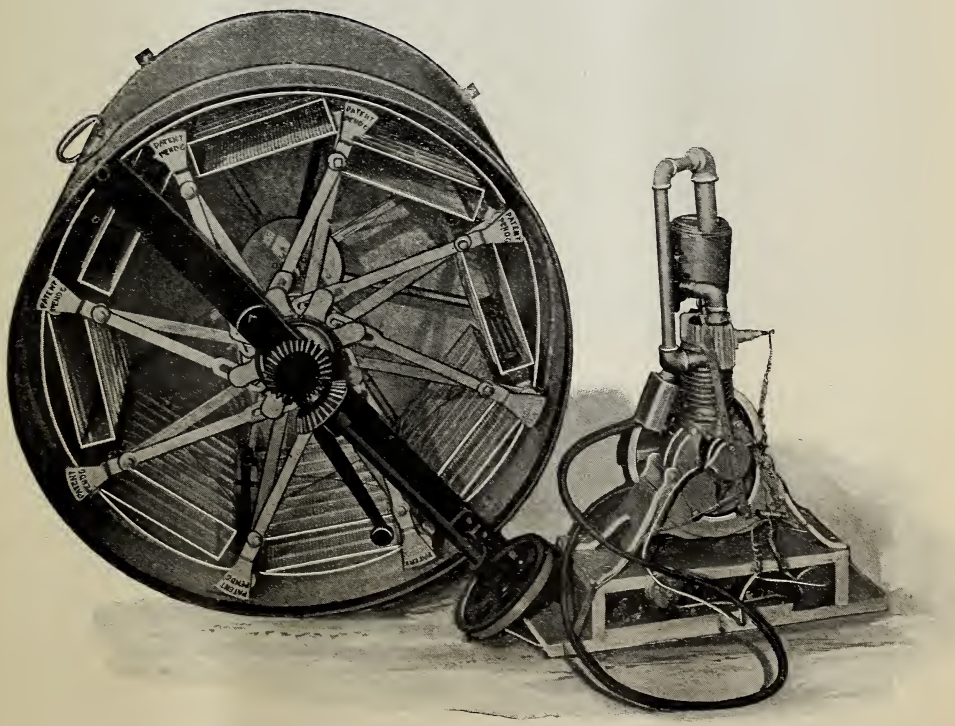
At just about the point when I was nearly tired out, but would not give up, Mr. Mendleson came in with a sort of sardonic grin, saying, "Say, Mr. Root, don't you think it would be a good idea for you to get up some sort of steam-engine to do this work?"

With a long breath, for I did not have very much to spare, I answered feebly, "Well, I should say *yes*."

There was a general smile among the "boys." When I protested that Mendleson had not oiled his machine, which he freely admitted—didn't suppose it needed oiling—he said that did not alter the situation much, because it took a full man power at best to run one of these big machines.

Well, we have been working at Mendleson's problem of some cheap power to operate these extractors—something that any one could handle, at small expense. Huber H. Root, the youngest member of the Root Co., and one who has had much experience in operating gasoline-automobiles, was given the job of solving the problem. He worked at it off and on for several weeks, and the result of his effort is shown in the accompanying illustration in half-tone. A 1¼-h.-p. gasoline-engine, air-cooled, such as is used on motor-driven bicycles, is mounted on a suitable frame connected to the extractor by means of a round leather belt. The gearing is reduced because of the high speed of the engine.

At first we thought such a motor would not be practicable, as it could not be stopped and started as readily as a steam-engine; but this difficulty, we found, could be completely overcome by allowing it to run continuously, though slowly, when not doing any work. The extractor is stopped by removing the idler from the belt, thus allowing the motor to run alone, and applying the brake. A steam-engine, too, would cost twice if not three times as much as the gasoline-outfit; and, besides, it would require a great deal more fuel to do the same amount of work in the same length of time.



ROOT'S AUTOMATIC EIGHT-FRAME POWER EXTRACTOR TURNED ON ITS SIDE TO SHOW THE REVERSING MECHANISM AND GASOLINE-ENGINE.

I might explain that the gasoline-engines are controlled in speed by what is known as the "spark-lead," a device to cause an explosion of the gasoline mixture in the engine at varying points of efficiency. Another means of control is to vary the strength of the mixture by throttling the amount of air that is admitted with the vapor. But in very small engines like this, air control is not practicable, and regulation must necessarily be secured entirely by the spark-lead before mentioned. Well, this spark-lead Huber has completely under the control of the foot of the operator. Attached to the brake-lever is an idler pulley that increases or decreases the tension of the belt. The pressure on the spark-lead lever causes the engine to go faster, and the minute the pressure is released the engine slows down. A pull on the brake-lever stops the extractor and releases the tension of the driving-belt so that the engine continues to run very slowly, leaving the comb-pockets at rest. They are loaded up with combs, eight in all, as shown in the illustration. A pressure on the spark-lead lever causes the engine to speed up; the other lever increases the tension of the belt, causing the reel to revolve at a high rate of speed.

Let me tell you that the speed of a power extractor is away beyond what one can secure by ordinary hand turning, with even a four-frame machine. The fact is, if the combs will stand it the centrifugal force may be run up to a point where the combs are extracted much drier than they possibly could be by hand turning. This is how Mr. J. F. McIntyre effects an important saving in honey, for bees are inclined to gorge and waste honey when the combs are returned too wet with honey.

Perhaps some gasoline-engine man will say that an *air*-cooled engine like this would not remain cool when stationary and in a room. Huber has overcome this perfectly by directing the exhaust on its own cylinder-head as shown, causing a rapid circulation of air around the cooling flanges of the engine. So perfectly does this simple device do its work that he has operated the outfit for hours at a time without overheating.

As to the cost of operation, it takes when under full service about one pint of gasoline an hour.

Mr. H. J. Mercer, one of the most extensive extracted-honey producers in California, saw the outfit when at our place, and pronounced it perfect so far as he could see.

In large apiaries, where considerable extracted honey is produced, and especially where labor is expensive, these little power outfits ought to pay for themselves in one season, and ought to be good for ten and possibly twenty years of service, depending on whether the user followed the directions sent with the outfit, for no machine will run very long without an occasional adjustment and without oil at the right time and right place.

HOW OLD ARE WORKER BEES WHEN THEY FIRST GO OUT IN SEARCH OF FOOD?

Can Young Bees do all the Work of Feeding Larvæ?

BY F. GREINER.

It has been repeatedly proven that worker bees become field workers, under normal conditions, when about 18 days old. But when man interferes and disarranges matters in the hive, bees may and do go out when five days old. No feeding need be done to start them, either. You may remember one of my experiments, made a number of years ago, when I made up a small colony from brood-combs full of matured and nearly matured bees, with not one hatched bee in the hive—this, of course, during the honey-flow. From this colony bees came out of their hive on the fifth day in the afternoon. They had a flight, a play-spell, and then went to work at once bringing in pollen and honey like any other colony. They continued to do so. One of the combs contained just a little young unsealed brood and a few eggs, perhaps not more than fifty cells in all. These were given on purpose. The fact that this brood was not neglected, at least did not perish, I take as conclusive proof that young bees just hatched are not so very helpless "critters" after all. When such larvæ are neglected for but a short time they show the effect very quickly, as every bee-man well knows. I have not observed closely enough to know for how long time a larva might stand such neglect. It might be well for us to look into this matter before we advise the making-up of new colonies from the brood-combs of shaken hives without some bees. It will seem to me it would be placing an herculean task upon the shoulders of the young bees as they are hatching, when we expect them to administer to the wants of that large number of hungry larvæ contained in an average set of brood-combs. They can not possibly be equal to the emergency, although I have not made the experiment. I never had the courage to make it, and never expect to. It is too risky.

The combs of brood which I used for my experiment contained brood which was more than three days of hatching—some were emerging at the time. To obtain this brood, several queens had been taxed. Nice clean combs had been inserted in different hives at one and the same time, had been kept there for three days, when they were removed and placed in an upper story on some good populous colony with queen-excluding sheet of metal beneath. There was no question as to the age of the brood, and it all hatched. Ordinary brood-combs, picked up at random, even if all brood was sealed, would contain a good deal of it only just sealed, and a day or so after being sealed. I fear such brood would suffer if not covered with bees enough to maintain the temperature. It would be

out of the question to depend upon artificial means to keep the combs warm. We seldom have such weather as would be necessary to prevent brood cooling off to a point of danger, and therefore I deem it a ruinous practice to leave unprotected brood to its fate in the way mentioned. There are better and safer ways to make increase.

Naples, N. Y., Jan. 24, 1905.

HIVES PACKED IN MAPLE LEAVES.

Wintering Bees in an Open Shed Outdoors.

BY W. H. KIRBY.

The photo which I send you shows my method of wintering bees, which I have followed for the last 20 years with success. After the severe test of last winter, when all the colonies came through safely, I consider it a perfect system for outdoor wintering of bees.

The little sheds are 12 ft. long, 3 ft. high in front, and 2 ft. high at back. The roof is in four sections, cleated together; the whole rests on a floor. The hives rest on 2×2 strips. There are seven hives in each shed, spaced evenly. The covers of hives are deep, and are clamped on so the leaves won't raise them up. Under each cover is placed a box 4 inches deep, with burlap bottom, filled with wheat chaff. This chaff-box is the same size as the hive-body, and rests on the hive true and even. Between the hives, and under them, and in an eight-inch space at the back, maple leaves are crowded in as closely as I can pack them, right up to the top of the hives. The front is left open, but a board stands on edge across the front of the hives to keep the sun from shining in the entrances, though not high enough to keep it from shining on the ends of the hives above the entrances, so it can melt the ice that forms on the inside on cold cloudy days and nights. Entrances are left open from two to three inches, and are raked out with a heavy hooked wire every week, and in severe weather are looked after, so they don't get filled up with ice from the moisture coming from the bees. I am convinced that bees packed as described will winter successfully in much colder climates than this.

Oshawa, Ont., Feb. 16.

WINTERING BEES IN AN OPEN SHED OUTDOORS.

THE PRODUCTION OF EXTRACTED HONEY.

How to Get Quantity and Quality at the Same Time.

BY VIRGIL WEAVER.

I want a few words in regard to "Quality, not Quantity." discussed nearly a year ago in GLEANINGS. As between the two, and as I am in it for the dollars, I will take quantity in preference to quality, as your correspondent put it. The very idea of putting one 40-lb. super on a colony of bees and letting it remain until after the honey-flow! That will do for a man who has plenty of money, but not for me. I will tell how to get quality and quantity at the same

time. As soon as your colony has eight well-filled frames of brood and bees, take one frame of this brood and bees (but not the queen) from the center of the hive. Put in its place a comb of honey with the cappings all broken, unless there is honey coming in. Then an empty comb is better. Now place a wood-zinc queen-excluder over the hive. Over this place a full-depth body. In this second story place the comb of brood and bees with an empty comb by the side of it, if honey is coming in. If there is a dearth of honey, place a comb of honey, if you have it. If you have to feed, place your feeder in this upper story. If your queen is a good one, in three days you can take out another comb of brood from below, and place it above as before, and so on until you have the upper story filled. If, by the time your first combs are about all hatched, honey is not coming in freely, place the upper ones below for the queen to refill. This will give you eight combs hatched and eight ready to hatch. By the time the second eight hatch, or before the bees get crowded, place a shallow super of drawn combs over the deep one. This super will catch your first honey. As soon as it is sealed in the center, place it down next to the brood-chamber, but above the queen-excluder. I will explain the reason for this. If you leave the full-depth super next to the brood-chamber, the bees will leave at least one-third of the combs for the queen; and as she can not reach this empty space it is a clear loss. By placing the shallow super of sealed honey next to the brood-chamber, all the space above the queen-excluder will be filled with honey. As soon as the deep or top super is three-fourths full, raise it up and give another shallow super of drawn comb. You had better not trust this colony to draw out foundation, for if you do you will find half a bushel of bees hanging out on a limb enjoying the fresh air and sunshine, some day, when you would rather they would be getting honey. Take colonies that are just strong enough to fill one shallow super. Put in one or two drawn combs; fill the rest with foundation; place over this the weak colony, and they will give better satisfaction than the stronger ones.

To get full-depth combs drawn, take combs of brood that are ready to hatch, from the brood-chamber, and place above or build nuclei of them for your increase. Place the foundation in their place, and it will be full of eggs in three or four days. The above method will give one full-depth super of 40 lbs., two shallow supers of 50 lbs., making 90 lbs. This, most seasons, will be as much as you will get, and this, too, of well-ripened honey of the very best quality. One year in about five this 90-lb. surplus arrangement will not answer. What, then, must we do? If honey is coming in with a rush, the three supers will be filled before the second or deep super is sealed. In this case take the four middle combs out of the deep super, and extract them; place the deep super between the two shallow ones, and by the time they will need more room you can take the shallow super from the top. Place it next to the brood-chamber; take the bottom super, which is now well sealed, and extract it, placing it between the deep and shallow super; and by the time it is filled, the deep super will do to extract, taking out all of the combs this time, and so on as before, always using your own judgment as to whether the honey is ready to come off. It must be sealed before it is extracted, if you want quality. If you want quality *and* quantity you must have empty combs to hold at least 90 lbs.; and if you have enough combs to hold 115 lbs., all the better—that is, three shallow supers, one deep super. This would make a hive forty inches high. It will not blow over if it is full of honey. Four shallow supers make a good hive; but by using one deep super as above you can get eight extra combs of brood to fill all this hive space. This combination gives three good results: First, quantity; second, quality; and, third, it does away with swarming. Not one colony in ten, on an average, will swarm. This year, out of sixty colonies treated this way, not one swarmed, and in a honey-flow, too, that gave 80 lbs. per colony.

Washington, Ia., Aug. 29.

THE HOFFMAN FRAME IN JAMAICA.

The Unsuitableness of Loose Frames for Beginners; How the Hoffman Can be Handled in Twos and Threes.

BY GEO. W. PHILLIPS.

Of all the frames I have used, the regular thick-top-bar Hoffman is by far the best. The good features that are enumerated are not herein stated for the first time; but I wish simply to show how they have recommended themselves in my own experience.

The Hoffman is a self-spacing frame. This is one reason why it is discarded by some and adopted by others. When I started in the bee business, and before I had purchased a stock of supplies, the nucleus that I had bought built up so rapidly that I had to obtain a ten-frame hive with old-style Langstroth frames from a neighbor, and transfer from the shipping-box into it. A heavy flow was on, and in two weeks or less every comb was built. But I was a novice, and you should have seen those combs! Some were veritable slabs of honey, while others were little better than foundation. Now, beginners are not the only ones who make these blunders in spacing. Why, I have been to apiaries owned by fairly competent bee-keepers where the unspaced frame was used, to find ill results of the same nature. Spacing frames with the eye is at best a hazardous method, and not to be depended on.

Every apiarist knows that, as the frames are placed, so the combs are built. Let a frame be spaced badly during a honey-flow. Try to fix the combs after, and see the re-

sult. Indeed, it is sometimes difficult even to remove them from the hive. I admit that fairly even spacing can be done with the loose frame; but this takes time, and is imperfect at best. With the Hoffman, every frame is spaced with mathematical correctness, and the apiarist can at any time turn them around or interchange with other hives without having the sides of one comb colliding with that of another.

The argument is commonly made that, in handling the Hoffman frame, one is more apt to kill bees. I don't think so, for the reason just mentioned. Bees are more likely to be killed by the rubbing-together of comb surfaces than at the thin points of contact of the frames. In self-spaced frames, as we have shown, the combs are evenly built, and danger on the former score is removed, while with an unspaced frame some combs are bound to be unevenly built, and there is no knowing when one is going to "butt" into the other. There is no necessity of killing bees at the point of contact with spaced frames. A whiff of smoke on the right spot is all that is necessary. Further, our Hoffman frames need not be handled one at a time. Sometimes the greater number need not be pulled apart at all, and frequently one has only to push six or eight at a time into position with his hive-tool. There is no more danger of killing bees in handling those six or eight frames than in handling one, for in either case the same points are brought together. On the other hand, when loose frames are used they must be manipulated one by one, and the danger of crushing bees is thus increased.

Furthermore, this handling of frames two or more at a time is a great labor-saving plan; and yet a plan, I must confess, not adopted by some of the users of the Hoffman frame. I want to break up a few strong colonies into nuclei, and, having my new hives in position, I pick up two frames in each hand, three if necessary, and distribute them around to my heart's content. Try this with the loose frame and see the result. No, sir; one at a time is the law of the loose or the staple-spaced frame. A swarm of bees clusters some distance from the apiary, and, owing to its bad location, I find it necessary to hive it on the spot and bring it home at nightfall. With Hoffman frames, o.k.; but with loose frames, unless I do some carpenter work first, the combs are likely to be in one corner of the hive when I reach home, and a large number of bees pressed nearly as flat as ferns. I want to move 50 colonies to a location ten miles distant to take advantage of a honey-flow there. With loose frames, hammer, saw, and rule and nails, to say nothing of smoke and muscle and stings, are brought actively into play ere the frames can be made to remain spaced. With fixed frames I am always ready to start. These are but a few of the many instances that are frequently occurring, in which time, patience, and labor are saved by using the Hoffman frame.

Now, there are objections to the thick top-bars, on the ground that bees build brace-combs between them. In my experience this has been just as true of the thin top-bars. Do you recall, Mr. Root, those colonies we bought from farmer Witter last summer? Well, most of them were on the old-style Langstroth frames; and I tell you I should like every advocate of the thin top-bar to have seen them. There were burr-combs below and at the sides, and on top of them. I tell you I had to do some lively carving before I could sever the connections. And this has been more or less my experience with thin top-bars. The bees were not satisfied simply with building brace-combs, but they would often extend the comb proper upward until the sides of the bar were covered, and then sometimes they would climax their work by building on top as well.

I run all my colonies in Jamaica for extracted honey, and use only eight Hoffman frames in a full-depth ten-frame super (the frames then hang loosely, but there is no necessity for absolutely correct spacing in supers). The plan is an ideal one, and there is some weight to the combs when completed. Try this plan with the thin top-bars, and see the result. Indeed, they soon get bent entirely out of shape.

An objection is made to the Hoffman frame on the ground that the spacers are in the way of the knife when uncapping. Strange that, in all the years I was engaged in producing extracted honey, I never was troubled along this line. Although I have uncapped many thousands of combs, I can't remember having cut off a spacer; nor can I recall an instance in which it was done by any of my assistants. In fact, we never thought of them. Perhaps, however, the wide spacing of our super frames, and consequent thickness of the combs was accountable for this.

But the most serious objection to the Hoffman frame arises from the propolis difficulty. I am, perhaps, in as good a position to appreciate the validity of this objection as any one else. There are times in Jamaica when a man has actually to use his hive-tool crowbar fashion in order to remove a hive-cover. This is especially the case when bread-fruit gum is being gathered. Under such conditions one might be inclined to think it impossible to use the self-spacing frame; but it is not so. The secret of the whole matter is in keeping the frames tightly crowded together. Then the combs may be separated with a hive-tool, and colony after colony examined with little difficulty. If the frames are left hanging loosely, however, then there is trouble, and the spacers will often split off completely in the effort to separate them. Yet, obviously, the bee-keeper and not the Hoffman frame is responsible for this.

I hold to the theory of the survival of the fittest. Nearly all the large bee-men in my country started with the loose frame and thin top-bar, because they were standard

then. To-day, in spite of the fact that extracted honey is almost entirely produced, and that the propolis difficulty is especially trying, they have adopted the self-spacing Hoffman. I submit it as my honest opinion that the standard hive fitted with Hoffman frames is by far the most practical device for honey-production on the market.

Denison University, O.

TROPICAL NOTES.

Some More Good Honey-plants.

BY W. K. MORRISON.

Bee-keepers who are compelled to use sugar as a bee-food, and who are distressed by the present high price of that article, can rest easy. Every available piece of land in the West Indies is being planted in sugar-cane, which means that, in a very short period, sugar will be cheaper than ever before.

One result of the present excitement in sugar circles is that the royal palms and other fine bee-plants are being ruthlessly cut down to make way for King Sugar Cane. It is a pity to see the magnificent "princes of the vegetable kingdom" cut down to make way for one or two crops of sugar-cane. The charm and beauty of the Porto-rican landscape lie largely in its splendid royal palms (*Oreodoxa regia*), and to see them cut down is a mortification.

Sulla clover, or *Spanish sainfoin*, as it is termed by Italian seedsmen, might prove of value to Cuba, and Porto Rico more particularly, where there is a pronounced dry season. In any case I am safe in saying both the northern and southern sainfoins offer a splendid opportunity to bee-keepers all over the United States. Sainfoin makes a better hay than alfalfa, containing less woody matter.

Porto Rico is all right as a bee country, but the apiary must be located in the right spot; and to find the right spot is not an easy matter for a "greenhorn." American conditions of life are entirely different from Cuba, Jamaica, or Hayti. Porto Rico has been a well-cultivated, populous country for more than 200 years. The population is largely white, which is a very striking fact for a tropical country.

GLEANINGS contains a number of advertisements, all good in their way, but one is lacking. There should be one of the necessary apparatus for making wax candles, same as used in Catholic countries. The making of wax candles and tapers offers a lucrative business to bee-keepers in many countries. In Brazil, wax from the wax-palm offers a cheap substitute, but it is not the real thing.

A good many of your readers in tropical countries do not seem to realize the transcendent merits of the wax-press. Perhaps this is due its name. Few seem to realize its value as a honey-press. If queen-excluders are used it becomes simply fun to take off a crop of honey and squeeze it in a wax-press. If care is used, there will be no need to get up steam, though it is better to use steam to improve the appearance somewhat, and otherwise make it more available for export. Exporting beeswax is a great business for tropical countries, actually comparing with the exportation of gold. Silver fluctuates more than beeswax.

The tropics and the arid or semi-arid countries will dominate the honey and wax markets of the world in the days that are to come. Which is best is largely a matter of taste and temperament. Both have their advantages and failings.

That exquisite tree of the hot-houses, the *Grevillea robusta*, is an excellent bee-plant, ranking with the best. It grows into an immense tree 150 feet high, so that the ladies who cultivate it in pots would hardly recognize it. This tree belongs to the family *Probeaceæ*, which seem to me to be always nectar-producers wherever they may be found.

Another very nice nectar-producer is *Grewia columnaris*, a native of the Eastern tropics. I should like to see it more common in the West than it is. No wonder it produces nectar in abundance, as it belongs to the *Tilia* family, linking the tropics with the linden of Europe and the basswood of America.

The great nectar-bearer of the Hawaiian Islands is the algarroba; but what is meant by this name? Is it our old friend, the saman, or rain tree (*Pithe colobium saman*)? Who can give us the true name?

After the Agricultural Department has imported its honey-plant seeds from Europe, let it follow up with an importation from Australia and Oceania, where there are many fine nectar-bearing plants. There is also a great plenty of such plants in South Africa, particularly bulbous and arid-resisting plants. By the way, that exquisite bulb, the freesia (*Refracta alba*), is a very fine honey-plant, and so is the buttercup oxalis.

Semi-arid countries are great on honey-plants, and Australia, South Africa, Tunis, Chili, Egypt, California, and Mexico have been very imperfectly called on to contribute their mite toward helping bee-keepers in the United States. Baron Mueller's book on extra-select tropical plants mentions quite a number of little-known bee-plants.

TAKING GLEANINGS FOR THE BOYS.

My boys have learned so much from your valuable journal in the way of bee knowledge that they can not get along without it. They have increased from 6 colonies to 21, and have taken as much as 110 pounds of honey from one colony, fine comb honey, and they are expecting great things the coming season. We all enjoy the Home papers, and read them as soon as we get the paper. J. F. WEBER.

Iuka, Ill., Feb. 6.

SUGGESTIONS FOR THE NATIONAL ASSOCIATION.

A Director for Every State Having a Sufficient Number of Members; Official Seal for Advertising.

BY WALTER S. POUDER.

As a friend and member of the National Bee-keepers' Association I wish to offer a few suggestions as to its work for the best interests of the membership. I have made many efforts to increase the membership in Indiana, but most of my efforts have been futile. Bee-keepers whom I have considered good material for this Association answer me that they can not see where they will be benefited. They say that they do not intend to quarrel with their neighbors about their bees. Many have the impression that the Association is intended principally to protect those who do not get along well with their neighbors. When asked why I am a member, and how it has benefited me, I simply have to say that I am a member because I considered it a good class of men to be associated with. I have kept bees since 1877, and in several localities in this city; and, so far as I can recall, I have never had a neighbor who did not admire my bees. A few pounds of honey distributed among my neighbors is advertising that has brought as good returns as any advertising that I have ever done. I admit that localities where there are great vineyards or extensive sheep-ranches might change the matter entirely, and that in some cases bee-keepers might be greatly imposed on; but I can not help thinking that in any case of quarreling among neighbors there is a better way to settle the matter than through the efforts of an attorney. I never have and never will appeal to the Association for aid in fighting my neighbor.

I have one or two suggestions to make, and in doing so I am voicing the sentiment of a number of Indiana bee-keepers. I would suggest that, when a State has secured a certain membership, that State should be entitled to a member of the Board of Directors. He should be one who is sufficiently interested in the work to perform his services free of all charges.

Members should be supplied with an electrotype with which to print the official seal and guarantee of purity on their regular labels, in printers' pale ink, color to be named by the Association. Members asking this favor should apply to the local director, and stamps should be furnished by the Association at the Association's expense, suitably worded, and bearing the autograph signature of the secretary. This would be similar in some respect to the method adopted by Uncle Sam a few years ago when we had our checks and drafts stamped.

I would also suggest that a certain per cent of the funds be placed by the manager through some reliable agency, advertising honey bearing the label of the National Bee-keepers' Association. Reproduce the label in all advertisements, and wording could be made very interesting to the general public by explaining granulation, "manufactured comb honey," etc., and many other points of interest could be mentioned.

I am convinced that such a procedure would bring a flood of increase in membership, and make the Association much more useful than it ever has been. Let us hear from others, as to how their ideas conform with the ideas expressed above.

Indianapolis, Ind., Feb. 6.

[There are some suggestions here that are worthy of consideration on the part of the membership.—ED.]

SHOULD THE NATIONAL BEE-KEEPERS' ASSOCIATION BECOME INCORPORATED?

Should it Undertake to Handle Honey and Supplies?

BY WM. M. WHITNEY.

Mr. Editor:—I notice from the report of the proceedings of the convention of the National Bee-keepers' Association, held at St. Louis, that the question of incorporation was up for consideration; that a committee was appointed to which the question was referred; that said committee reported its action, and asked further time in which to consider the matter, and was given until the next annual meeting in which to make a final report.

All members of the National have or should have an interest in this matter; and I take it that the committee, before making final report, would be pleased to have an expression of opinion from the rank and file of the membership upon so important a question. It was a wise saying of the chairman of that committee, when he reported to the convention, asking for further time in which to make final report, that it was of vital importance, and should not be acted upon hastily.

This may be considered purely a question of policy. All such questions, as a rule, have two sides to them; and, as we look at matters from our individual standpoint, which often differs from that of others'; it is hardly to be expected that our conclusions will be unanimous upon any subject which may be presented; hence it may not be considered strange if a difference of opinion should develop in this case.

In considering this matter, the prime question seems to be, "What is the object of incorporation?" What are we to gain by it? Is it for the purpose of doing business as a corporate body? Is it to give the National a standing in court? or is it hoped that, by incorporation, we may command greater respect from legislative bodies? Is it one or all of these? Let us take up these questions seriatim, and discover if we can what the results of incorporation may be.

We hear it occasionally whispered that it

were a good thing if the National would undertake the marketing of honey and the handling of bee-keepers' supplies for its members; but when the matter is given serious thought it seems to me that no considerable number of persons could be found who would favor such a proposition. Such an enterprise would come into direct competition with many industries, the owners of which have done more to build up the National than any other persons connected with it. Such a course would plant within itself the seeds of discord, which, germinating, would culminate in disruption of the Association. Individual bee-keepers in localities could, if they would, combine their mites for the purpose of buying their supplies at wholesale, thus making a saving of expense. They could also unite to affect to advantage the price of honey in their immediate vicinity; but for the National to incorporate for this purpose for the whole country is not only objectionable for the above reason, but makes an unwieldy affair, involving no small expense to keep the machinery in running order. Added to this the liability of being involved in expensive litigation, with possibly a paid attorney by the year, insuperable objections to the National entering into any such experiment or enterprise will be seen.

Without dwelling longer upon this phase of the case, let us pass to the next question. Is it desirable to incorporate for the purpose of having a standing in court? Do the advantages exceed the disadvantages? If the National is permitted to sue anybody and everybody, it is put in a position to be sued by anybody and everybody. Even at best it would have a standing only in cases where the interests of the corporation alone were involved, but not where the interests of the individual member is affected. Were the National charged with adulterating honey, it would have a standing in court against the accuser, but not in the defense of an individual member who might be accused.

Newspapers and individuals may say what they please in a general way about the manufacturing of comb honey or the adulteration of extracted honey, or about any thing else connected with the business; yet there is no way of redress through the courts, even though the Association be incorporated. Neither could any member invoke the aid of the Association in its name, though he might be swindled by some commission house, or have his entire apiary stolen. Why? Because it is individual property, and not property of the Association. So far as the members are concerned, incorporation is but an empty name, yet likely to entail additional expense. Very few corporations worthy of the name but have a paid attorney by the year. Would the National be an exception to the rule? Possibly, but more than likely it would not be.

But what of the next question? Does incorporation give us any prestige before a legislative body that we do not otherwise possess? Well, let us see. It is said that, on approaching the law-making power for aid, we are confronted with the question, "Are you incorporated?" Now, from what experience I have had in like matters, that question should be regarded as a mere bluff —an easy way of getting rid of a matter which not in the least interests them. The Illinois Association is incorporated, if I am not mistaken; but its influence does not count, nevertheless, for its officers come to the Chicago and Northwestern and ask us to join them that they may have the influence of numbers before the legislature. Numbers, *numbers. Voters*—this is the power that sets the legislative machinery in motion to grind the grist of pure-food and other laws the honey-producers so much need.

When the Association can present to the politician the voter's argument of numbers, then it will have all the power it shall have any use for as an association. I do not mean to say that legislators are not willing to listen to argument, or that they are controlled by improper motives; but they must first become interested; and, if I'm not very much mistaken, political influence is very likely to have the desired effect. Organization of local societies all over the country where bee-keepers are found, with the express understanding that each shall become an integral part of the National, would do more to secure what has been so long sought than if we incorporated in every State, not excepting *New Jersey*. Use the surplus funds for this purpose, just as union labor organizations have done to increase their numbers, and it will not be long before the membership of the National will be swelled to 50,000; then the question will not be, "Are you incorporated?" but "What can I do for you?"

Incidentally another matter may be mentioned in this connection, which may have some bearing upon this question of incorporation. It will be observed from the report of the proceedings of the St. Louis convention that the proposition for an incorporation of individuals within the National was entertained, and to some extent discussed, by the members. Why any such matter should have been entertained to become a part of the proceedings might be a query in the mind of a critical parliamentarian, but such seems to be the fact. Now, suppose we incorporate and encourage such an affair —become a sort of foster father—how long do you suppose it would be before the child would be using the parent for his own advantage? It would be another case of "a wheel within a wheel"—a case where "the tail wags the dog," very much to the confusion and bewilderment of the dog.

If individuals, as such, desire to form an organization for the purpose of handling bee-keepers' supplies and the products of the apiary, that is their matter, with which no member of the Association should interfere; but from the program so far as developed, the Association seems to become a sort of sponsor for such an organization, else why was the matter entertained—a

committee appointed, and the matter made a part of the records? It were far better did the National take the initiative and open up shop for business than to become thus involved. In either event, as before stated, the seeds of discord will have been planted to ripen into bitter fruit. To both of these propositions, as a member of the National who desires nothing less than its complete success, I most earnestly object.

Now, Mr. Editor, but a few of the salient points in this vitally important matter have been hinted at. Much more may be said, and yet the subject not become exhausted; but as a member of the Association I am anxious to hear what the majority think on this subject; and if these few hints shall set the members to thinking and talking, so that the committee shall have the benefit of the judgment of the rank and file, my object will have been accomplished.

Lake Geneva, Wis., Feb. 4.

DOES FREEZING KILL BEES?

A Request for Scientific Investigation; an Incident Showing that Freezing is only an Indirect Cause of Winter Losses.

BY WM. A. STEWART.

The discussion on the subject of freezing proves that there is at least one point in the nature of the bee that is not fully understood. I wonder if Dr. Phillips could not investigate this subject and tell us just how it is. Meanwhile, since we are hearing opinions based on practical experience, please allow me space for a few remarks which I hope will be useful.

On page 11 Dr. Miller quotes Mr. Abbott, and then asks, "What number of bees must be reached before they will stop freezing and begin to starve?" Now, doctor, I am afraid he can not tell you; but, while it may seem a paradox, I think we can find substantial data to support the theory that they freeze first and then starve. It makes no difference (except as to time) whether there is one bee or a whole colony; and, so long as they are helpless, it makes no difference whether they are frozen as stiff as icicles or only chilled. In either case they will die if not relieved soon enough, and in either case they are all right if warmed in time.

Feb. 14, 1904, I found a colony in the yard, out of stores, and frozen. They were discovered by listening at the entrance for the slight sound which bees always make when in normal condition. When the hive was opened in a warm room the bees were found so stiff they would make a noise like some hard substance dropped on the floor. The mercury that morning was five below zero, and, after the bees became helpless, the air inside the hive must have cooled to about the same temperature, for they were so cold that frost formed on their bodies in the warm moist air. However, when taken out of the hive, and well warmed near a stove, nearly all the bees in the cluster resumed activity, and were ready for something to eat. They were put back on well-warmed combs, given some unfinished sections, and put in a cellar. We did not find that either queen or workers were injured by the freezing, being a valuable colony the past season.

As to the length of time they had been frozen, they were flying twelve days before, and the cold spell had lasted five days when they were found, the mercury being one morning nine below.

Now to draw our conclusions:

1. These bees froze without starving, for they were not dead. They froze because they were out of food, which means in this case out of fuel. They had gone safely through colder weather, and been able to take their honey, even from the remotest corners of the hive.

2. Freezing did not kill them; and probably no amount of freezing to which bees can be subjected by the climate of the United States will of itself cause their death. It is fatal indirectly when there is honey which they could otherwise reach.

3. If the above colony had remained unaided they would have died by starving, or possibly from the effects of the wetting they would have received in thawing out; and all frozen bees might be saved if taken in time.

I give this theory because it is in accord with all the known facts in the case. If any one can show it to be erroneous I shall welcome better information.

Elkin, Pa., Jan. 17, 1905.

[I believe that Mr. Stewart is right—that the bees do not freeze to death, for numerous instances have shown where bees have been frozen so solid that they were fairly brittle, and remained so several days, but when subjected to warmth would revive. But if they go too long in a frozen condition without food, their vitality is weakened and they die. I always feel that, in a very cold winter, without an occasional warm day, the outdoor bees are liable to suffer because these bunches are not able to warm up enough to move over where there is honey. Last summer we put cages of bees on blocks of ice in the refrigerator for three days. They were stiff and cold, but invariably revived on being warmed. We did the same thing with queen bees, without apparent harm. If I am not mistaken, Mr. Stewart states the exact position held by Mr. E. T. Abbott, editor of the *Modern Farmer and Busy Bee*.—ED.]

MIDWINTER FLIGHTS.

A High Temperature Not Desirable; Importance of Having a Thermometer in the Proper Place; Hard Candy as a Food.

BY ALLEN LATHAM.

Mr. Root:—Two paragraphs by you recently in GLEANINGS raise questions in my mind, and I wish to say a word in opposition to one or two statements.

On p. 63 you tell Dr. Miller that you prefer a temperature of 65 to 70 for a winter flight. May I ask where you keep your thermometer? Why, sir, if we waited in New England for such a temperature our bees would not take a flight from the middle of November till the middle of March one year in ten.

I used to say that a temperature of 49 in the shade was sufficient, but I now know that much lower than that will do provided other conditions are right. Permit me to define the conditions which make flight possible or advisable.

If the air is warm enough to soften the snow in the shade (a temperature above 32 will do it) bees can fly with safety from hives situated in sheltered positions of south exposure, provided the air is still and the sky clear. Only a few bees will be lost by alighting in the shade or through weakness.

If the air is 45 the bees will fly safely, even though there is some wind and a few small clouds; but large clouds and steady or strong winds will cause considerable loss. If the temperature is above 55 the bees can fly with comparative safety, even though the sun is not shining and the wind is blowing. In this case it is always a south wind.

Dr. Miller was right to let his bees fly with the temperature at 44 if his thermometer hung where neither direct nor reflected sunshine could strike it, and where it could not gain warmth from bodies warmer than the air. January 1, 1905, furnished a splendid flight for bees here, though the temperature went no higher than 46 in the shade. Bees cleaned house, and even started a little robbing.

I would say here that I have succeeded in getting a fairly good flight from a colony with the temperature only 32, and should not be afraid of 34 or 35 for a general flight with the air still and sky clear. Last winter, from the middle of November till March 22 the temperature did not reach 40 except during a night when the wind blew from the south. On only one occasion did the temperature rise to 35 unless accompanied with cloudiness. On that occasion I laid sacks and carpets in front of the hives and scattered hay over the snow where the bees would be most likely to alight. I succeeded in getting satisfactory flights from those colonies favorably situated, the colony which flew most coming out in spring very strong in numbers, and vigorous.

The fact is, few people have their thermometers so hung that they record the temperature of the air, recording only the temperature of the object upon which they hang or the temperature of the air in a sheltered porch. Every bee-keeper would do well to hang a thermometer in a box opened to the north. The box should be painted white, and the thermometer should hang freely from the top without contact with the walls of the box. Try this, and I think you will deduct at least 15 degrees from the temperature at which you would like to see your bees fly, or else Medina is a blessed place for bees.

With the air at 65 to 70 one could sit outdoors without hat or wraps, and read without any discomfort. He could not work about the hives with any comfort unless he took off coat and possibly vest. No, you would not want to see such unseasonable warmth, even for the bees, for harm would come from it to fruit-trees and vines.

On page 32 you advise the feeding of hard candy. Have you had much experience in feeding that, and with success? I wiped out nearly a whole apiary one winter, following exactly the directions to be found on p. 32. I found it impossible to get the candy cooked enough without burning the honey. Those colonies which had cakes but little burned lived through, weak: those which had the worst-burned cakes died.

Again, honey is deliquescent; and if the winter comes on damp, the cake will gather moisture faster than the bees can use up the honey; or the weather may turn so dry that the bees might as well try to eat a stone. There are much better ways to feed bees in winter, especially in a cellar, and beginners or inexperienced hands would do well to fight shy of hard candy.

One good way is to cook white sugar and water to a temperature of 230 degrees, or till it will stir to the consistency of the inside of a fresh chocolate-cream. It must not be so soft as to run down upon the bees nor so hard as to dry up. This is a much safer cake to lay over the frames.

One can fill a jar with honey and invert it over the frames on a cloth, or a piece of glass with a pin under the edge. But, best of all, lay some comb honey flat over the frames.

Mr. Neff can feed his bees in the feeder provided he makes the syrup so thick that the bees will not be roused to an excited state in their efforts to evaporate excessive moisture. The syrup should be as thick as honey, nearly. If he will do this he will, in my opinion, do better than to feed with hard cakes.

I write this that I may save Mr. Neff and others from possible and probable disaster by trying a method of feeding which is not safe without previous experience.

Norwich, Conn.

[Yes, I did say I preferred 65 or 70 degrees; but I did not mean to say that I would not take a lower temperature when the bees can fly. Sometimes 45 to 50 is warm enough, and at other times it is too cold. A good deal depends on whether there is a wind blowing, and the amount of snow on the ground. A few days ago it was about 45. Bees were flying well, but we lost thousands of them on the snow. Why did we let them fly? Half of them were allowed to fly, and the rest were confined with straw over the entrances. I am satisfied that, if all the bees had been confined, those that were lost in the snow would have been saved. A good deal depends on conditions.

Years ago A. I. Root used a large amount of hard candy without any bad results; but this was made by a local baker at the time. Possibly it contained a little glucose; for candy will not usually assume a transparent glass-like condition without glucose or honey. We would not use glucose under any circumstances. Now, it is possible that honey, because of its liability to burn, *may* make an unsatisfactory winter food. However, we are wintering some of our colonies on the very same food that you condemn. But it is possible that the average bee-keeper had better make a soft candy of the kind you describe, not using either honey or glucose. We have used a good deal of queen-cage candy, but much of it is lost in the form of granules rattling down on the bottom-board, and then being carried out.—ED.]

BROOD-REARING INDUCED BY MIDWINTER FLIGHTS.

Remove the Bees Early in Spring, and Leave them out.

BY O. H. TOWNSEND.

Mr. Root:—In a recent issue you ask for reports on moving bees from cellars in midwinter for a cleansing flight. I used to practice it; but since I quit taking them out for such a flight my success has been much better. It causes the bees to start brood-rearing, which uses up the vitality of the old bees. I think winter or early brood-rearing is the main cause of spring dwindling.

For the last ten years I have removed the bees from my cellar just as soon as possible after I could see any bees bringing in pollen, which is generally in March. I move them out in the evening, so they get quieted down over night; and if the weather is too cold for them to fly they stay in the hives.

I notice by referring to records that I have removed them from cellars just about the *13th of March several seasons.* I would by no means return them to the cellar, even if snow comes, bringing with it zero weather, as I find the cold does not hurt them in the least. On one occasion we moved the bees out, and the next morning there was four inches of snow at a temperature of four below zero. I was quite alarmed for the safety of the bees; but, although they did not fly for over a week, they were all bright and healthy.

If they are returned to the cellar after having a flight they invariably go to rearing brood, no matter what the weather is outside. If the bees are left in the cellar late when it is necessary to open doors at night to keep the temperature down, it keeps the bees uneasy. This, too, will cause them to start brood; while if they are taken out early, and left out, they will rear brood only as weather permits, thereby saving the vitality of the wintered bees until we have "bee" weather.

When you take your bees out for a cleansing flight, leave ten average colonies outdoors. They do not need to be packed—just leave them alone with tight covers, and see if they do not come through in better condition every way at the commencement of the honey season. If they are damaged by leaving them that way I will agree to pay you all the damage or the difference in the average value between the ten and the ones returned.

If I lived further north, where spring is later coming, I should not expect to take the bees out quite so early, as the weather would be such that the temperature would keep down in the repository later. I aim to hold the temperature as near 45 as possible, and it does not get more than one or two degrees below that, and not over three or four above 45, except late in the winter.

My best cellar is arranged so I can more than double its capacity or room by opening doors. As to the weather, I sometimes open or close these doors to help regulate the temperature. With good stores the loss in wintering and spring of bees need not be more than with any stock—sheep or cows, for instance. For cellar wintering, the long cold ones suit me best, and the bees are the most quiet.

All the bees I lost last winter of those wintered in the cellar were from starvation late in winter and spring, the bees having used about double the amount of stores that they have for any time previously for years.

Otsego, Mich., Feb. 24.

A WINTER FLIGHT SOMETIMES A NECESSARY EVIL.

Generally Speaking, Not to be Advised.

BY C. A. HATCH.

When I commenced to keep bees it was almost the universal custom to set them out during February or early March for what was called a cleansing-flight. But some began to doubt its advantage, and to experiment; and the result was, all were willing to forego so disagreeable a job where the results were in doubt, or, as some claimed, a positive injury. Various experiments were tried, among them setting out for a week or as long as warm weather lasted, then returning; leaving out for one day only; packing in chaff and leaving out permanently; but among all such experiments none seemed to prove that the bees were benefited enough to pay for the extra work.

My own experiments went to show that, if bees were uneasy, and spotting their hives, it could be stopped for a time by a flight; but if a certain time intervened between this flight and the setting-out time, say three weeks or more, it was a real injury to the bees. The reason, it would seem, is not far to seek. When we know that a disturbance like a winter flight will start brood-rearing, and that the eggs laid by the queen will be out of the cell in three weeks, it would go to show that these young bees

ought to be out in the sunshine instead of a dark cellar, and their uneasiness and irritableness only added to the trouble we were trying to help.

Any thing that excites bees takes from their length of life; as their life is not numbered by days but activities, and all our effort in wintering has been, and properly should be, concentrated on how to cause them to remain in that quiet semi-dormant condition so much to be desired. Is it desirable for us now to begin backward and introduce a very disturbing element? Some one might say the excitement will come any way, when they are set out. Admitted; but it will be for only once, and why double their troubles? A man with weakened vitality might be able to saw a cord of wood in one day; but to saw two cords in two days might be the death of him. Our bees are weakened by cellar confinement; and if we take extra vitality from their already weakened powers we must expect to shorten their lives and prepare for spring dwindling.

There are times, however, when bees are wintering poorly and it seems almost impossible to keep them in the hive as they are so restless that a flight might help matters, not as a good thing of itself, but as a choice of evils. Under such circumstances I could see where it might be of great benefit to give them a chance to breathe fresh air and feel the sunshine, provided this time of exercise could be so timed that the permanent setting-out would come before the bees again became restless, say inside of three weeks.

CONSERVING ENERGY.

All a bee-keeper's effort in spring management is, or ought to be, directed to conserving the vitality of the remaining bees that have lived through the winter; for on these, he knows, depends the caring for the brood that is to fill his hives for the summer start; and why we should want to wear them out by excitement on a winter flight is not comprehensible. We say, go slow, prove it first.

Richland Center, Wis.

WINTER FLIGHTS.

Indications when they are Necessary.

BY G. BOHRER.

My experience has led me to conclude that if bees, when put into the cellar or other indoor respository, remain quiet in a temperature of not less than 35 nor higher than 45, they may be regarded as in perfect health, and should not be molested until they are put on their summer stand permanently. But if from any cause their bodies become distended, and they become restless, and begin to crawl out of the hive, they should by all means be given an open-air flight if a warm day can be had.

I remember quite distinctly that, during the winter of 1872, many bees died in Indiana of what was called dysentery or bee cholera. They died in the cellar and on the summer stands alike. The cold periods were protracted, so that, when bees came out of their hives, it was only to perish, as but few of them were able to enter the hives again. I carried several into a warm room and let them fly out against a window which they plastered almost all over with their excrement. I cleansed out the hive in each case, and dried as best I could the combs, and then brushed the bees into a basin and turned them back into the hive, and at night returned them to the cellar. All that I treated in the above manner went through the winter much reduced in numbers, but recuperated, while nearly all not so treated died.

In Central Kansas, where I now live, our cellars are for the most part very dry and dusty all the year through, so that, if bees are put into them in healthy condition and both temperature and ventilation are properly regulated, they will, as a rule, pass through winter in fair condition without being carried out to the summer stand for an open-air flight. But if it is found necessary to give them such flight, the day must be quite mild or a great loss of bees will result from it.

Lyons, Kan.

[See editorial comments on this general subject of winter flights in the editorial department.—ED.]

THE FLOW OF NECTAR.

How it is Dependent on Atmospheric Conditions; the Effect of Thunder-storms; some Interesting Observations.

BY J. E. CRANE.

The effect of the weather upon the flow of nectar in flowers is not, perhaps, a very practical question, and yet it is one in which I have been greatly interested for the past 35 or 40 years. It is not probable that Franklin had any thought of telegraphs or telephones, electric lights or trolly cars, as he studied the phenomena of electricity. It is not at all certain that, if we knew just the effects of the weather upon flowers, we could in any way alter those effects; yet it may be well for us to understand them. Beyond the suggestion that the season was either too wet or dry, or too cold, we seem to know little upon this subject.

If we place a populous colony, with an abundance of room, upon a pair of scales we can not help being interested during the honey season at the almost constantly varying yield of honey from day to day. Sometimes we may be able to tell with some degree of certainty the cause, but more frequently we may not. I remember very distinctly my experience some twenty-five or thirty years ago when I kept a careful record of the weather, using a wet and dry bulb thermometer. Two days stand out very clear in my memory. It was during white-clover

bloom. There had been for some days a very good flow of nectar—6, 8, 9, 12, and one day it ran up to 15 pounds gain, the greatest of the season. It was one of those soft balmy days, the temperature just right for comfort, the wind south, the sky a little hazy, the outlines of the distant mountains indistinct. The conditions seemed nearly perfect for the flow of honey or nectar. During the night that followed there was a change. The next day the wind was north; the sky clear and blue; the air more bracing than the previous day, although not cold; the outlines of the mountains east and west were sharp and clear; the bees could fly from morning till night. Surely the bees ought to gather a large amount on such a beautiful day. Imagine my surprise to find that night they had gathered only three pounds. What made the difference? There were just as many flowers, the same bees. The instincts of the bees had not changed, nor was there anything to prevent the bees gathering nectar but the lack of it, so far as I could see.

A very wet season is generally considered very unfavorable for a good yield of honey; and yet the two wettest seasons I have known in the past fifty years both gave most excellent crops of honey, much above the average.

I have found it a rule that honey is more plentiful when the wind is south than when in the north. I live between two mountain ranges, and we have very little west wind. In a season when there is a large flow of nectar we may get better results with north wind than with the south wind in seasons of scarcity. I was told, when I began keeping bees, that showery weather is favorable to honey-gathering; and if we watch the bees come in just before a shower we may come to that conclusion ourselves. But if we stop to think we may remember that as many bees as would ordinarily come in in one or two hours rush to their hives in perhaps ten minutes or less. One hive on scales on such a day will show no increase over others; and if the shower is a thunder-shower, the following day is quite sure to show a decrease in the amount gathered.

Not only do thunder-storms appear to be deleterious to the flow of nectar, but often almost fatal to securing a good crop of honey. My attention was called to this some years ago during clover bloom. The season was rather late; but early in July the fields were white with clover, and bees were storing honey rapidly. One day I went to one of my outyards when I found the bees idle, nothing doing. Indeed, I have sometimes thought that, had a fire passed over the range of this yard of bees, the flow of nectar could hardly have been more quickly or completely cut off. I found, on looking it up, that a severe thunder-storm had passed over the range from which this yard of bees gathered their stores, two or three days previous to my visit. I noticed another thing quite as surprising—that my other yards of bees gathered little honey after this time, although they seemed to work more than the one in the immediate track of the storm. Was it possible that a heavy thunder-shower would not only affect the flow of nectar in its own track, but also some distance from it? It certainly looked that way. My attention was called to this subject a few years later when I noticed a great decrease on one day below the previous day, without any apparent reason for it; but on looking over a daily paper it reported an unusually severe electric storm as passing some thirty miles to the north of where I live, on the first of the days mentioned.

The flow of honey the past season was one of unusual interest from a scientific standpoint. There was a very good flow from clover for about three weeks, when it dried off and basswood bloom came in. As often happens, the basswood gave little nectar at first; but after a few days it began to yield fairly well, at first slowly, soon increasing to nine pounds in one day from hive on scales. "Now," I said to myself, "we shall at last get a fine crop of basswood honey, which we have not secured for several years;" but, alas for human expectations! The day following a yield of nine pounds, there was a gain of only five pounds, and the next of only two; and then a loss, the colony on scales not even gathering enough to live on, although very strong in numbers, and basswood at its best so far as amount of bloom goes, and the weather such that bees could fly most of the time.

What could be the cause of such a complete failure from basswood, for the yield after this was very light, although the bloom lasted for many days?

After former experiences I accounted for it in this way: On the day of the largest yield there was a severe electric storm a few miles to the northwest from here, doing much damage. This appears to have cut down the yield here nearly a half the next day, when, near night, we had a storm where my yard was located, when on the following day there was another reduction. In fact, this same showery weather continued for several days, although bees could fly most of the time the flowers refused to yield their nectar.

Thunder-storms do not appear at all times to be equally injurious, and at times the flowers will in two or three days resume their normal condition after a storm, while at other times they seem to lose their power or disposition to furnish nectar for the rest of the season.

I should not like to say that thunder-storms are the cause of the decreased flow. It may be that the conditions favorable to the development of storms may be unfavorable to the production of honey, although the decrease of honey occurs after the storm rather than the same day.

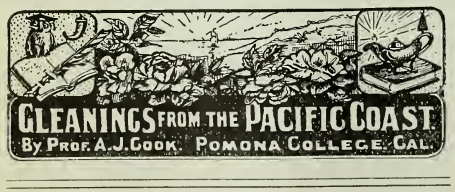
Where a thunder-storm occurs with a heavy rainfall, followed by a north wind and a lower temperature, there is almost sure to be a decrease in the honey-flow.

Now, while severe thunder-storms appear to be very detrimental to the flow of nectar, a rain unaccompanied by electric display does not appear to injure the flow of honey unless it comes off cold after it. The wettest season I remember, and a particularly good one for honey, was in 1872; but the rain came almost wholly, not in thunderstorms, but the sky would be covered by a light haze which would be deeper and thicker when the rain would come down, after which it would break away without thunder or lightning, only to be repeated a day or two later. In fact, such weather at times seems to increase the honey-flow. In 1880 we had in this section a peculiar season. We had little or no clover, owing to the previous open winter. Early in May I went to a neighboring county trying to find a place where I could move my bees so they might secure enough for winter. On my return I found basswood was going to bloom full, and I decided to leave them where they were. Presently basswood came into bloom, and the bees flew freely from their hives—yes, and buzzed about the flowers, but seemed to get little more than enough to keep them from starving, until the very last week of the bloom, when there came a rainy day, and the basswood turned over a new leaf, as we say, and the flowers gave an abundance of nectar, so the bees worked in the rain, bringing in what they had so long been looking for. The next four days were pleasant, and bees were able to fill their hives and store considerable surplus. Here the rain seemed to be a benefit, but it was quite free from any electrical disturbance, and was followed by warm weather.

I have given these notes that others may take up the subject where I leave it, that in time we may be able to understand the subject more perfectly than at present.

Middlebury, Vt., Dec. 14.

[We should be pleased to hear from others of our correspondents, for by a comparison of notes we may learn something.—ED.]



There was an interesting discussion in the United States Senate a few days ago. The subject under consideration was free-seed distribution by the government. Senator Lodge, of Massachusetts, referred to it as a "moss-grown humbug," while Senator Platt, of Connecticut, stated a truth when he said that the seeds are often very ordinary, and such as might be picked up at any market. He further said, in effect, that the spending of $300,000 annually in distributing these seeds was an arrant waste. He also repeated Senator Lodge's epithet of "humbug." I don't believe there ever was a more senseless project in any government than this matter which has been continued for so many years in our own. It seems to me we may almost call it a disgrace to the Republican party; and as I have always belonged to that party I feel more freedom in expressing my feeling in the matter. I suggest that we all write to our respective Congressmen, urging upon them the discontinuance of this colossal burlesque. I have observed the matter for years, and I know that Senator Platt said truly that the seeds are often only ordinary. When we add to this the further fact that many a package is simply put aside to remain unused till consigned to the junk pile, we certainly have a prodigious count against this whole business of seed distribution. Let us all send our petition of *don't!*

Southern California is typical of arid America. By arid regions we mean places that receive annually less than 20 inches of water. Our own Southern California averages considerably less than this. For a series of years the average at Claremont has been about 15 inches. Occasionally the season's downfall is below half this average. This matter is of great importance to beekeepers, as, with much less than the average, we are sure to get very little if any honey. We may get a crop with some less providing the rain comes late in the season and in such fashion as to sink wholly or mostly into the ground. There is one advantage which arid regions have, which must never be lost sight of. The few and sparse rainfalls do very little leeching of the soil, and consequently the soil fertility is something surprising to those who have always lived in humid regions. In Ohio and Michigan the subsoil is very barren, and, when turned to the surface, will grow little vegetation for a series of years. Here, and in most of our arid regions, we find it quite otherwise. Our soil is rich away down. That able scientist, Dr. E. W. Hilgard, puts this very happily in the remark that the rancher of California is in possession of several farms, each on top of the other. From this fact our plants make no mistake in sending their roots away down deep into the soil. Our plants and trees often send their roots down five, ten, and even twenty feet, and no doubt find abundant fertility in all their quest downward.

There is another advantage gained in this deep rooting of our California vegetation. During our long dry seasons the surface soil becomes very dry and parched. In this the rootlets could not slake their thirst, and so could get no food. In pushing down, however, into the depths of the subsoil they find the needed moisture, are enabled to drink up the needed soil elements, and so live on. This is why we find, in nearly all cases, that our California plants, especially those native to

our clime, or those which have become acclimated, have a strong deep tap-root. Our sages and buckwheat, which make our region famous for its honey product, are very marked in this respect. By this deep rooting they find moisture and fertility sufficient to keep them alive, even in the years of greatest drouth, while with a more generous rainfall they are enabled to store up energy sufficient to hand over to the bee-keeper often a phenomenal yield of most delicious honey.

The vegetation in arid regions is found to possess many peculiarities. First, we often find a curtailing of leaf material. This is most emphasized in such plants as the cactus, which has no leaves at all. Its green succulent stem surface is a substitute for leaves, and thus the evaporating surface is curtailed to the utmost. Other plants, native to our clime, though possessed of leaves almost always show them in compound form. These long narrow leaves also give less surface, and thus limit transpiration or the giving-off of moisture. Others of our plants have leaves that are thick and leathery, and thus transpiration is further reduced. All who have observed our Southern California vegetation have no doubt noticed the shining aspect of much of our foliage, the leaves looking as if they had been varnished. This is another attempt on the part of our vegetation to lessen the escape of moisture and hold on to that which is the one great need of every arid region.

There is another feature of our vegetable growth in these arid regions which surprised me the first spring after I came to Southern California. I refer to the fact of the different periods of the germinations of the seeds. In the East we expect all the seeds of each species of plant to germinate in their season. Thus the adder-tongues, the spring beauties, and the hepaticas all spring up with the first warm breath of the season. In California it is far otherwise. With the early rain will come scores of gilea, shooting-stars, and baby blue-eyes, to be followed in succession over and over as the rain comes again and again. We can see why this is so. If an early rain comes, followed by a long period of drouth, the early plants will spring up and die. With a much later rain others will germinate, find sufficient moisture to live and grow, and thus seed will be produced, and the real object of the plant will be accomplished. Thus the plant is continued as a result of varied dates in germination.

Closely correlated with the above is another feature of our flora that is more significant to bee-keepers. I refer to the long period of bloom of most of our plants. From what I have just stated we see that this must be true of our annuals. It is as strikingly evident in our perennials, like the white and ball or black sages. While the black sage usually commences to bloom in June I have known it to anticipate this period by at least six weeks or two months. Then, again, most of our plants produce long racemes or panicles. They commence to bloom usually below, and continue the blossoms clear to the tip of the plant. This is nowhere more strikingly exhibited than in the common white sage. Thus we may have bloom for several weeks, and we can readily understand the phenomenal harvest which the bee-man is likely to secure. In case of the wild buckwheat, the first blossoms will open in early June, while the date of the last knows no limit except as frost calls a halt.

Everywhere in our country the sparrow (or finch) is a favorite with bird-lovers. Who in the East has not early fallen in love with the modest little chippy and the equally attractive song sparrow? Who has not said "blessed," as he has listened to the song of the latter or seen it busily employed ridding his lindens of the young scale insects? If we except the European (or house) sparrow of the East (and he is a late foreigner from the old world), I know of none of this sparrow tribe that are not welcome guests in every field, garden, or orchard. Not so in California. The house linnet, or little red-breasted linnet, is our most common bird. Its welcome matin greets my ears all the summer through, even long before sun is up. Yet it is a little rascal. It devours the luscious loquats of April, not waiting for them to ripen. Even before this it has stripped the apricots wholly of their fruit-buds. Later the apples, pears, and quinces are gauged by this same little varmint. No sooner has he broken the peel than the bees hasten to stay the waste. Thus the bees get the curses where they by good rights belong to this rascally bird. The linnet is our one bird-pest that merits death at the hand of the orchardist in Southern California.

CELLAR WINTERING.

"Say, Doolittle, what do you think about giving bees, which are being wintered in the cellar, a flight or two during the winter?"

"Well, Mr. Clark, may I ask you a question?"

"Certainly. I should be as willing to have questions asked me as I am to ask them of you."

"That being the case, allow me to ask you how high you have seen the mercury between the 12th of November, 1904, and this, the 3d day of March, 1905?"

"Well, 42 degrees above zero is the highest I have seen it. What has been your observation on this point?"

"The highest I have noticed it is 43, and I have been watching the matter quite closely. Does not the time between the dates spoken of include *all* of the winter months?"

"Yes. But what are you trying to get at?"

"Just this: It is useless to talk about winter flights for cellar-wintered bees, no matter how bad they are spotting their hives or wanting to fly, if there are no days during winter when it is warm enough for them to do so."

"That is something I had not thought of. How warm does it need to be for bees to fly out?"

"About 45 in the shade, with the sun shining brightly, and practically no wind, when the snow is on the ground; and as we had no such days during the winters of 1903 and 1904, this talk about giving 'cellared' bees a flight in winter does not avail with those under such environments as we have here in Central New York during the *hard* winters for *bees*."

"That is so; and it is something I did not think about while reading in GLEANINGS the advice regarding such flights. But what can we do?"

"Use such cellars as will keep the bees from wanting a flight; for bees which become so uneasy that they spot the hives are far from wintering well, and I consider it far better to have a cellar which will winter the bees well, *without a desire for a flight*, than to have a cellar in which they become so uneasy that we are obliged to open doors and windows at times, carry the bees out for winter flights, and worry over them more or less during the winter besides."

"But can we have such a cellar?"

"Certainly, if we can maintain the right temperature while the bees are in the cellar."

"I think I saw a picture of your bee-cellar in the A B C book, did I not?"

"Yes, there is such a picture and a description of it there."

"Where is that cellar?"

"Over there to the right. Don't you see it?"

"What! That peak I see sticking out from under that bank of snow?"

"Yes. That is where the cellar is, but it has been nearly bare of snow till lately, or until since our February snows."

"How often do you go into it?"

"I have been in only once since the bees were settled down, after putting them in—I think on the 10th of January."

"Only once since the latter part of November?"

"Yes, that is right."

"I do not suppose you would want to go in now, this sunshiny (nearly zero) morning, on account of disturbing them?"

"If you want to help shovel the snow away from the door, we will go in."

"I shall be only too glad to do that."

"You will find one shovel in the barn there, and I will take this one. There, I think that will do, as this first door swings in, made that way on purpose so little shoveling need be done when I wish to go in."

"Well, that is something I had not thought of. It does save a lot of shoveling."

"This next door swings out by the first one, so as to allow the next to swing over it; and this next one as well."

"What! four doors?"

"Yes, they enclose these three dead-air spaces of about three feet each, as you see. Now before we light this candle (a sperm candle is better than a lamp for a bee-cellar), we will stand still here in the dark for a few minutes till our eyes get over the effects of the bright sun on the snow; otherwise we can not see much, as an artificial light looks dark in comparison."

"Listen! Is that little murmuring sound I hear, like some far-off wind, or old ocean, miles away, the bees?"

"Yes. Some claim when bees are wintering well that they are absolutely noiseless; but I do not find it that way. All cellars, into which I ever entered, where there were from twenty colonies upward, always gave this same sound you now hear."

"I should not have noticed it had you not waited about striking a light; but when we are perfectly still, then it is noticeable. Ah! but that light now shows the hives piled up on top of each other. But where does any ventilation come from?"

"Through the surrounding masonwork, and through the three feet of earth which is over this flagstone roof, together with, probably, a little through the three dead-air spaces between the doors at the entrance."

"What! don't you provide any special ventilation? I thought it was claimed such was one of the great necessities if bees were to be wintered in the cellar. In fact, I supposed bees could not live without a lot of fresh air from the outside."

"I know there are those claiming that such is necessary. But let let us look at the bees."

"What kind of bottom-board have you there?"

"That is the Dr. Miller bottom-board; and it is one of the nicest things I know of, along the line of bottom-boards. It is now deep side up. Look in that two-inch space between the board and the hive."

"Why, Doolittle! there is half a swarm hanging down there; and where they touch the bottom-board they are six inches across; and, just see! they hardly stir. There are not a dozen dead bees in there, and not a pint on the whole floor of the cellar. How many colonies are there in here?"

"There are 57. The cellar was built for 100. It is barely possible, if the whole 100 were in, that things might not be as nice as now, but I think about the same."

"And you have not been in here since the 10th of January?"

"That is correct."

"How many dead bees did you sweep up then?"

"Not any. I went in then only to see that no mice had come in with the hives to worry the bees; and the bees would be just as well off had no one come in till the time to take them out in the spring. Do you think these bees need a winter flight?"

"Need a winter flight? Why, if there were not a little stirring there, on account of my breath, and the candle within six inches of them, I should say they were dead. I can only see that they are in as perfect condition as they were last fall, from all I know of bees. And is this all there is of cellar wintering of bees with such an underground cellar as this?"

"Yes, only that there are few winters when there are as few dead bees as there are now. Generally when I have been in here as long as we have been in here now there will, once in a while, a bee fly out to the light; and when that is so, there will be a quart or so of dead bees to sweep up, if I think best to come in and do so, once a month. But I have about concluded that the bees are just as well off if left entirely to themselves (from the time I am satisfied that I have brought in no mice) till they are taken out for good in the spring, on the appearing of pollen for them to gather."

"Not a single bee has 'took wing' since we have been in here—not one come to the light; scarcely any dead, either under the hives or on the bottom of the cellar, and no ventilation provided for. Well, this beats me. But what is the temperature? Just 43 above zero! Doesn't it vary from that on extremely cold or very warm spells?"

"From 43 to 45 is all the difference I have ever seen—45 right after they are put in, then gradually lowering to 43, and then a gradual rising to 45 again, a week or so before setting out."

"And any one having a little rolling land or hills can have such a cellar as that. I'll have one for another winter."

"I do not find it necessary to have just such a cellar as this, for my experience with my out-apiary tells me that bees will winter nearly if not quite as well in an ordinary farmhouse cellar as in here; at least, my 30 colonies at the out-apiary winter nearly as well in the farmer's cellar as do these."

"Are they wintering as well there this winter as are these?"

"I can not say for certain. I have not been there since they were put in in the fall. But I believe they are."

"Don't you go to see them?"

"No. In all the fifteen years I have had them there, I have been there only twice during winter, and they have invariably come out well."

"But the farmer attends to them, does he not?"

"No; he pays no attention to them. He just uses his cellar the same as he always did before my bees were there—goes in after his vegetables, opens up his 'bulkhead' doors to load up his stuff to carry to market, etc. I place no restrictions on him."

"How are they fixed there?"

"The same as here, except that there is a §-inch-mesh wire-cloth screen put up before all entrances, to keep the vermin out, and the fronts of the hives are turned toward the wall so as to exclude the light partially when he has doors and windows open for any reason. It is to his interest to protect his vegetables from freezing, etc., and in following his interests he takes care of mine and the bees—or, at least, as I have said, the bees come out in the spring all right each year."

"And you don't worry about them in the least?"

"No. I used to, to some extent; but now I am confident they will come out all right, and so I turn my attention to other matters during the winter, scarcely knowing that I have any bees except in a nominal way. And, let me say, it is a relief to me beside what it was when I was thinking of setting them out for winter flights, opening and closing ventilators, doors, windows, etc.; and the beauty of the whole thing is, the bees come out far better, on an average, than they did when I was 'up to date' in all of these matters."

"Well, if that farmer's cellar winters your bees as well as these are wintering I am going to try mine, for I have a good cellar under my house. But just one more question before I go. What do you think about the advocating of the closing of entrances to keep out the cold where bees are wintered outdoors, as given in February 15th GLEANINGS?"

"I wrote up and advocated the very same thing in the '70's, and was called a 'fusser' and a 'tinkerer,' and told that it might do with a few hives; but with 50, 100, or 300, such things were not practical. And, after following it with a part of my colonies for years, and leaving others to take care of themselves, I was driven to the conclusion that those not so treated came out equally well for the honey harvest."

[See editorials.]

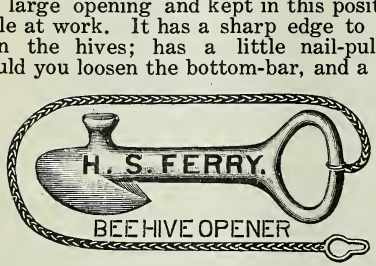
USEFUL TOOLS.

The Ferry hive-opener and Ferry bee-brush are the result of experience in the apiary, using screwdriver, old file, or corn-broom brush, wings, or almost any thing to open the hive with, or brush the bees off the combs, as well as, when wanted, finding they are at the last hive worked upon.

Both Ferry hive-opener and Ferry bee-brush have a small chain attached, about

one foot long, with a tin eyelet (or button-hole) that you put on to a button on your right side, at a height that, when your hand is hanging down, it is in position to take either the hive-opener or bee-brush. You never lose them if in this position.

The advantage of the hive-opener is, it is always with you; and when you are at work opening hives, one finger is slipped through the large opening and kept in this position while at work. It has a sharp edge to pry open the hives; has a little nail-puller, should you loosen the bottom-bar, and a lit-



tle hammer to drive the nail in, always ready, and in your hand. Should you desire not to have it in your hand, it is suspended by a chain, ready for use at any time.

The bee-brush is equally handy, being suspended by a chain. It is a double brush. One can brush the bees from both sides of the frames at the same time. The frames, being free from bees, are at once removed and placed out of reach of the bees before they know it. If you want to brush only

one side of the frame of bees, spread the brush a little, so that it will not touch both sides. But I seldom require this, as I want both sides free from bees. H. S. FERRY.

Mt. Vernon, N. Y., Feb. 15.

[Mr. Ferry has sent us a sample of both the tools here shown. I have had only a very limited opportunity to test the hive-tool in opening up some colonies outdoors to determine their condition; but so far I am inclined to think favorably of it. The scheme of attaching the tool to the person by means of a chain having an eyelet in one end to hook over the vest or pants button is excellent. The eyelet can be very quickly unhooked, and as quickly replaced. The ring in the end of the tool for the insertion of a finger makes it possible for one to have the tool attached to his hand, and yet at the same time use the whole hand in doing hive work. This ring may also be used in removing super-springs.

The only objection to the implement is that it can not be used as a screwdriver, and really I do not know that this is essential. The little hammer-head and tack-claw I consider much more serviceable.

The tool proper is just four inches long, and it may be carried in the pocket like an ordinary jack-knife, hence always with the apiarist. A hive-tool, to be ever ready, ought to be of such size that it will not be bulky in the pocket. Indeed, I expect this coming summer to carry such a tool with me, along with a thin bee-veil, either of which I can put into service when I happen to be in the bee-yard unexpectedly. If I could have a sort of collapsible bee-smoker that I could put in my pocket—cigars might do, but I don't smoke—I should consider myself completely equipped.

Actual experience with this hive-tool this summer may show some defects in construction; but I am satisfied of this: That one form of hive-opener and frame-pry will not suit everybody. Indeed, I submitted two of these models to friends of mine, and they do not think much of it, as they consider it the wrong shape, and not as good as some others that have been presented. It is the old, old question again that the shoemaker has to meet. Some of his customers will have buttoned shoes and others laced ones, and still others will have only boots.

I have had no opportunity to try the bee-brush; but I did test, some two years ago, one embodying somewhat the same principle—namely, a double brush, devised by Mr. John Hammond, of Buena Vista, Ohio. A report and illustration of this are given on page 476, June 1, 1901. But this brush would not, I imagine, be nearly as serviceable nor handy as the Ferry implement with its *adjustable* jaws, so to speak. The Hammond brush has bristles mounted on two fixed parallel standards, while the Ferry has those same standards adjustable to fit inequalities in the comb, thick and thin ones; and, what is of considerable importance, it allows the operator to close the jaws or bristle edges over the comb; then when the bristles are in contact with the surface, one can give one quick sweep downward. A relaxation of the tension allows the jaws to spread again, to come in contact at the top of the comb, when another sweep on both sides can be given, disengaging every bee. I believe the *principle* is all right; but, like every new thing, it may require some modification of form.—ED.]

DR. MILLER'S ADVICE TO A YOUNG MAN ABOUT TO START IN BEE-KEEPING.

Howard Berkley, Berkley, Pa., is a farmer boy 15 years old, with two colonies of bees, Root's A B C and Langstroth, and a location having basswood, clover, fruit-bloom, fall flowers, etc., with few bees in the surrounding country. He wants me to say in GLEANINGS what hive I would advise, and whether it is advisable for him to go extensively into bees.

If you think of producing extracted honey, don't have any thing less than a ten-frame Langstroth or Dovetailed hive; the same also for comb honey, unless you expect to give your bees the closest attention, in which case the eight-frame Dovetailed may do as well or better. You have all the pasture needed to make a fine success, the chief question being whether Howard Berkley is the right chap to make a successful bee-

keeper. Go to work to find that out. Give careful study to the two very excellent books you have. Don't be in a hurry to increase rapidly in numbers. See how much honey you can get, rather than how fast you can increase, being satisfied with an increase of 50, or at the most 100 per cent annually. In that way you can feel your way along and find out better than anyone else can tell you whether it will be well to give your chief attention to bees.

Stick to your father's farm for a long while yet, and get a good education. The better your education the bigger the world in and around you, and the more enjoyment you can have in taking care of bees. Above all, be a good, honest, Christian man. The market is overstocked with smart men; but square men such as I have mentioned are at a premium. Be one of the premium sort. Best wishes for your success.

Marengo, Ill. C. C. MILLER.

[The last paragraph, if nothing more, is good enough to paste in the hat. Yes, sir, there is always a premium on square men. —ED.]

PROPORTION OF WATER AND LYE FOR CLEANING PROPOLIS; MISS WILSON EXPLAINS.

Mr. Green wishes I had been a little more explicit as to the amount of water used to those three cans of lye, page 13. I should guess the kettle used would hold about half a barrel of water. I would go this minute and measure; but truth compels me to say that we do not own such a kettle (I wish we did), and the one used was borrowed for the occasion from our wash-woman.

I did not measure the water put into the kettle. I just filled it full enough so I thought it would not slop over when the utensils to be cleaned were put in, leaving room to move them about freely, adding more water as it boiled away.

I presume I used more lye than was actually necessary at the start; but as it is not very expensive, and, so far as I could see, never injured in the least the articles to be cleaned, I put in that amount to start with, and it was all needed before I was through. It takes less time, and does better work, to have the solution very strong at the first.

Marengo, Ill. EMMA M. WILSON.

PROGNOSTICATING THE CLOVER-FLOW.

Mr. Root:—As you ask for reports, page 1156, for rule or rules to know the previous year whether we are going to get a crop or not, I know of no sure rule. A good growth of clover in the fall, and plenty of snow or a mild winter, has always been the surest rule with me. The year 1901 was very dry and hot. June 1 the honey-flow began, and was heavy until about the 15th or 20th, when the flow stopped by clover drying up.

The year 1902 was a wet one, with no clover honey-flow, and the winter following was mild, with three or four inches of snow, and clover was green under the snow all winter.

The year 1903 was also wet, with the greatest growth of clover known, which gave a crop of 150 lbs. per colony, spring count, with a great deal of swarming. The growth of clover continued thick until fall. The winter of 1903 was very cold, with no snow. The next spring, on hills where the north and west winds could strike, the clover was all dead where it had been a perfect mat the fall before; but on the sides and bottom of the hills, and also where the grass was long to protect it, there was a fair to good growth.

Honey crop of 1904 of white clover was a complete failure. Now, in 1903 there was plenty of rain all through the season.

Heartsease in this locality is a very sure yielder. I have always secured a crop each year ranging from 20 to 100 lbs. per colony. This year I got 20 lbs. per colony, but there was very little honey in the brood-chamber at the beginning of the flow. The flow begins about Aug. 15, and lasts till about Sept. 15.

Dixon, Ia., Dec. 27. E. A. DONEY.

[By your rule, then (and it is the one generally accepted), if we don't have too dry a summer we ought to get a good flow of honey from clover this summer. Last fall there was an unusual amount of young clover everywhere. While the winter has been cold there has been no lack of snow.—ED.]

THE HOFFMAN FRAME UNIVERSALLY LIKED IN JAMAICA.

I wrote all the prominent bee-men, asking them to point out any defects in the Hoffman frame, if there were any. Replies: "The Hoffman frame is an ideal one." "We will have no other." "The only fault in the Hoffman frame is, that every bee-keeper does not put them up alike."

F. A. HOOPER.

Kingston, Jamaica, Dec. 5.

[Mr. Hooper has himself something like 20,000 Hoffman frames in use. He's in close touch with nearly all the extensive bee-keepers of the island. so that his statement regarding the merits of this frame in question can be taken with some weight.—ED.]

INCREASE NOT WANTED; HOW TO PREVENT.

I have as many colonies of bees as I want. I should like to know how to manage those bees so as to get good service from them in storing honey without any increase. If this can not be done, what method will come nearest to it? A. T. ZIMMERMAN.

Washta, Ia., Feb. 7.

[Increase can be held in check by hiving the swarms back on the old stand in a hive containing empty combs or foundation. The parent colony with its combs should be placed alongside of the hive with the swarm, but with the entrance at right angles to it. When the swarming season is nearly over, or all the brood hatched out, shake the bees

of the parent colony in front of the swarm. Another good way is to use the "shook-swarm" plan. When the brood is hatched out in the parent colony, shake again; then extract the combs containing the honey, or use them as food supply for winter.—ED.]

TO MAKE A GIVEN BEE PASTURAGE A LEGAL PROPERTY RIGHT.

As to crowding the territory with bees, how would it do to have a law to sell out territories about three miles square to the highest bidder, with provisions to let the proceeds of such sale go the owners of the territory sold, or to the number of acres of some kinds of crops adapted to bee-pasture?

Cuba, Ill., Feb. 8. M. W. MURPHEY.

[This looks feasible; but when we come to work out the details we run into difficulties. The land-owners would sell to the bee-keeper paying the highest price. But suppose Jones would want more than Brown for the right of the bees to trespass on his land. The law so far recognizes bees as *feræ naturæ*—that is, wild by nature, or, to put it in another way, animals that go where they please in spite of man. As long as these animals do not interfere with the farmers' crops, no complaint is now raised; but just the moment the land-owners find out that the nectar in their clover-blossoms or other honey-producing plants has *legal* intrinsic value, then a lot of ignorant farmers might ask all kinds of prices or combine and prohibit the bees altogether from the territory by putting up an exorbitant price. The law might specify that no more than a certain amount per acre should be paid; but I am afraid, taking all things into consideration, if we were to try to draw our legislators into the intricacies of the problem they would become discouraged and kill the bill in committee. Then the question of constitutionality would also come to the fore. —ED.]

BEE DISEASE RESEMBLING DYSENTRY; PECULIAR INCIDENT GIVES WARNING OF THE ATTACK.

I have now about thirty colonies of bees and I want to ask you some questions about a disease that has been raging among them by which I have lost about ten hives in less than two months. Some of these were in modern hives, and others in old-fashioned box hives, but every one of each kind had plenty of good honey. The bees are mixed—some blacks, some hybrids, some Italian, and the disease works alike on them all. I have examined the bees as closely as possible, and they seem to have something like dysentery. They seem to be swollen, and look as if they had been dipped in grease. They can not fly much after the disease seizes them, and they linger along a week, more or less, before they die. I have seen but two queens in the ten hives. One was dead in the cell, and the other was alive and all right, or seemed to be, while there was not another single bee in the hive that could fly. I didn't see any young brood at all in any of the hives. A thin substance, something like sweetened water, drops down on the floor of the hive about a week or two before they have the disease. Can you tell me what the trouble is and if there is any remedy?

J. W. HARRIS.

Commerce, Ga., Feb. 11.

[It is to be presumed you are familiar with bee paralysis; for in some respects the disease described resembles that particular trouble. If it is not bee paralysis one might almost surmise the bees had been suffering from suffocation. Without some specimens of the bees it would be impossible to diagnose the disease more exactly.—ED.]

A PLAN FOR REARING QUEENS AND RUNNING FOR INCREASE AT THE SAME TIME.

I submit a plan for queen-rearing, which, if of sufficient interest, you can publish. I studied out this plan; and as I am running my apiary for extracted honey exclusively, I hope it is entirely feasible. I want to increase my apiary, as this has been a bad winter for bees, and I have lost so far about 20 per cent—no weather for bees to fly here since Jan. 1. It is now time, here in this latitude, for bees to begin gathering pollen and begin brood-rearing. This is the plan:

In April, start cells in colonies by Alley plan of mutilating strips of newly made comb. When cells are capped, cut out, place in protectors, and enter in a strong queenless colony for hatching. When virgins are hatched, place in introducing-cages (to eat out candy and be released), and introduce in *upper* stories of strong colonies, the queen *below* being prevented from getting to the upper story by solid zinc excluders. A small exit is to be left in the upper story at the rear of the hive so the virgin queen may fly out for mating. In about ten days from introducing, when the young queen begins to lay remove a frame or two with adhering bees; confine for 24 hours, and let them be made into a nucleus. CHIP HENDERSON.

Murfreesboro, Tenn., Feb. 11, 1905.

[I see no reason why your plan won't work, except in one particular, and that is, getting the queens fertilized from upper stories. Unless honey were coming in, many of the virgins would be found missing instead of fertilized. A surer and better way would be to form the nuclei, and at the same time give one of the caged virgins. Confine the bees in the nucleus for 24 hours (better 48), and the virgin, when released, can take her flight. There would be no particular advantage in forming the nuclei after the queens were laying, even if it were feasible to have them fertilized in upper stories. —ED.

BEE-STINGS NOT A PERMANENT CURE FOR RHEUMATISM.

Several years ago I wrote you that I thought bee-stings had cured me, for I was

free from it for several years. But I had a bad fall from a ladder, and the mash-up I got brought it all back. Then I seemed to get rid of it again gradually until I moved here, where I took malarial fever, and then the old rheumatism was as bad as ever. I think this time it was the moving to a new location which is on low ground.

Porsmouth, O., Jan. 30. J. HAMMOND.

[Still your experience does not show that the stings did not help to alleviate. Your trouble came back because of other conditions.—ED.]

THE DE LUXE TIN BOXES FOR COMB HONEY.

I can hardly conceive of these ever coming much into use in either the United States or Canada—rather too much work, I should judge, in a country where help is as costly as here. It has occurred to me, however, they could be made desirable for holding sections themselves. Make them to hold not more than 11 oz., and, better yet, half a dozen. When decorated as those you have illustrated, there would be no need of glass. Those who desire it could have their name and address on them, or they could be nicely labeled, as are many boxes found on the market. The no-drip feature could be easily made by a fold in the tin. I should judge that they could be made so as not to cost more than if as much as the kind in use at present. One to hold six dozen sections would no doubt help to sell them in this quantity instead of single sections. It would be interesting to know what they could be made for. Where the wood and glass shipping-cases are repacked in a larger case, these tin ones would have an advantage of a saving in freight, and would take up less room. It would not be necessary to make them honey-tight. How is this done with those described? Would not the candying feature be objectionable when used as described, especially when extracted honey is put in to make up the light weights? and would that liquid honey find its way up into the empty cells? It seems to me that it would not only be slow but mussy. G. A. DEADMAN.

Brussels, Ont., Canada.

FORMALDEHYDE CURE FOR BLACK OR PICKLED BROOD; WINTERING BEES UNDER WATER.

I see in GLEANINGS that some bee-keepers claim formaldehyde fails to cure black, foul, or pickled brood. I think they do not use it strong enough or do not use enough. Three years ago I lost 37 colonies. I had never seen any foul or black brood, but the offensive odor gave it away. On examining I found from three to five combs in every hive that had from ten to twenty-five cells on both sides of the combs, generally opposite or nearly so, often more on one side than the other, the capping dark and sunken, the bee shrunken and pickled, seldom ropy, but smelling like a glue-pot or a burnt bacon rind. I took every frame, scraped off all the propolis, then took a No. 8 finishing nail, uncapped each cell and took the bee out; then I took out one end of an old hive and hung it on hinges, making a door; lit my oil-lamp with a four-inch wick, and put it inside the empty hive; then took a round tobacco-can with a flat bottom, poured in half a pound of liquid formaldehyde, and placed it over the lamp; then put on another empty hive; then I tiered up seven hives, stopping each entrance, and covered the top with a thick quilt. Occasionally I would open the door where the lamp was, and see how it was progressing. Where all was evaporated I removed the lamp, then let them stand six hours, then set them out to air. Since I have put swarms in those hives I have seen no more black or pickled brood. But it was a very offensive-smelling job. You can hardly wash the glue smell from your hands. My hives were full of honey in the fall. In the spring the bees were dead, and not a drop of honey. My opinion is, a colony with foul brood will use three times the amount of honey that a healthy one will.

Again, we see it advocated that bees must have a dry place to winter in. Last year I got caught out. Winter set in early, and, being a carpenter, I had a large house to finish which took me till the 15th of January. My bees were 3½ miles from the cellar, and I was afraid to move them. Part of them were on low ground. There came a thaw and then a freeze, so the water could not settle away, freezing two or three inches of ice in and around the hives. I tried to get them up; but it was three weeks before I got them up; but I gave them air from the top. Every one of the submerged colonies came out all right in the spring, and those that were on high ground froze to death. If any one wants to try the experiment he can. This year my bees are in the cellar, and as quiet as kittens. CALVIN CRAIN.

Sparta, Mich., Jan. 24.

[You do not say whether those hives that you tiered up contained infected combs or not. If not the disinfection of the hives alone would not prove any thing, as not one in a hundred would transmit the disease without treatment.—ED.]

SUCCESSFUL INDOOR WINTERING WITH BEES SHUT IN THE HIVES.

I put my bees (38 colonies) in my house cellar Dec. 12. I had no way of making a partition to darken the cellar, so I put a block across the entrance and shut them in. I put two 2×4's up edgewise on the cellar bottom, and just piled the hives up three deep. I took them out to-day for a fly, and found every one practically as good as when they were put in. They are in eight-frame Dovetailed hives and several of them weigh 60 to 65 lbs. to-day, and are practically full of bees. I did not weigh any when I put them in, but they seemed to be as heavy to carry as when they went into the cellar. I don't see how any man who keeps bees can afford to winter outdoors when it takes 20 to 30 lbs. of honey, and then lose half of them. Our cellar is very dry. We are lo-

cated in Buffalo Co., in the heart of the alfalfa belt, and any man who wants to get into the best farming and bee country on earth can come in here and we will not complain about being crowded. The president of a large bank in this county told me they had several hundred acres of alfalfa on their farms, and they wished some bee-man would locate near it to see if it would not help the seed crop. T. J. QUAIL.

Miller, Neb., Feb. 20.

[We usually consider it bad practice to shut bees up in their hives in the cellar unless a large amount of ventilation is given. It would be my opinion that the result will not be so favorable later in the season. I should prefer to take the chances with light rather than with closed entrances.—ED.]

SWEET CLOVER; YELLOW NOT AS HARDY AS WHITE.

I bought some sweet-clover seed of you last year, yellow and white. The yellow came up a good stand, but died, root and all, in July. The land would have made 800 lbs. of seed cotton per acre—sandy land with red clay subsoil. The white clover is on very nearly the same kind of land, but is nearer the branch. The frost killed it in December, but the roots are still alive. It is starting new growth below the top of the ground. I did not use any manure or fertilizer on any.

Seneca, S. C. R. L. BOGGS.

MAPLE SAP.

In the spring if a maple limb gets broken will the bees make honey of the sap that flows? Would it be of any value to feed to a colony short of stores at that time—about March 1? HARRY SELDERS.

Brookside, W. Wa., Feb. 11.

[Yes, the bees will gather maple sap the same as any other sweetened water. They would invert it or modify it just the same as they would the nectar of flowers, but it would not be honey any more than sugar syrup fed to bees would be honey.—ED.]

A LITTLE "KINK" IN SCRAPING SECTIONS.

While visiting a neighboring bee-keeper recently, I told him during our conversation how the use of salt in the manufacture of comb foundation came about. "Yes," he said, "valuable discoveries are sometimes made through seemingly trifling circumstances. For instance, one day while scraping sections I went and cut off some bacon with my scraping-knife, and then returned to my work without thoroughly cleaning the knife. Just try wiping your knife occasionally on a piece of bacon skin, and see what a difference it makes."

Well, I have tried it and found it a decided improvement. No matter how gummy the bee-glue may be, it does not stick to the knife and fingers as before. The knife, of course, should not be so greasy as to make spots on the section. The inventor of this kink is "the honest Dane," mentioned in one of Rambler's articles.

WM. MUTH-RASMUSSEN.

Independence, Cal., Nov. 3.

LIGHT-WEIGHT SECTIONS; FOUL BROOD.

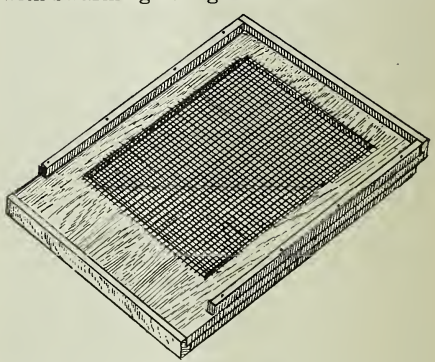
Foul brood caused my bees to fail me last year, and they did not fill my few 4×5 sections to the thickness to give full weight. I thought it was caused by fences not spacing far enough apart. Do you think disease might have had something to do with it?

De Land, Ill., Jan. 23. F. W. MORGAN.

[A light honey-flow might result in scant filling of the boxes; however, if foul brood were present in the hive it would weaken the colony to an extent where it would not crowd the sections as much as it might do otherwise.—ED.]

VENTILATED BOTTOM-BOARD.

The bottom-board illustrated is the best one for hot weather that I ever tried. It should be 10 or 12 inches from the ground so the air can pass up through the screen wire as shown. This screen allows the trash to drop through to the ground, while the air passes up to the combs. This does away with swarming to a great extent.



When gummed up it can be cleaned by holding it over a blazing fire.

It may be used in winter by tacking thin boards over the screen.

This bottom is not needed under a weak stand of bees that might go up and leave their combs exposed; but it is all right for strong ones. Bee-keepers in hot climates will soon see its good qualities.

Potts, Va., Jan. 11. JOHN J. CONELLY.

[Such a bottom-board would do very well in warm climates; but it might be too much of a good thing the greater portion of the season in the central and northern States, especially at night. For moving bees it would be very useful. But the objection to wire cloth under the brood-nest is that it covers up with dirt from the brood-nest, and, moreover, the bees will propolize it all over. Of course it can be melted off as you describe, but that is a lot of work. It would be better to provide the bottom-board with a

wooden slide on the under side so that the opening can be closed as weather conditions require.—Ed.]

THE PREVALENCE OF THE BELIEF IN THE COMB-HONEY LIE.

Like most bee-keepers I have been troubled a good deal in the past year about these stories of manufactured comb honey. Whenever I talk to a stranger about honey I always like to give him a chance to express his opinion on the subject. It is hardly an exaggeration to say that nine-tenths of the people believe these stories as firmly as they believe in their own judgment. Most of us have a great appetite for the marvelous, and a strong inclination to believe that we are being cheated. For this reason I think our denials are nearly useless. The world is accustomed to seeing an injurious story followed by a denial; and in any case where a lie has been received in good faith a contradiction by an interested party has very little effect.

I think our best course in fighting these lies is not to fight them too fiercely. Like all foolish stories it will finally die of mere weakness if we let it alone. In the mean time we can make our product and our dealings so honest that our neighbors, at least, will believe in us, and be ready to take our word for it when we tell them that our honey is made by the bees. If you must sell in the cities, sell in a near one, and invite your wholesale man to visit your apiary. If he comes, show him every thing, but especially the bees. If he can not come, you can at least visit him often enough to keep on good terms. Be an honest man, and he will be sure to find it out and recommend you to his customers. Above all, see that your honey is of good quality and honestly graded. After all, our best argument is a chunk of fine honey. C. F. Bender.

Newman, Ills.

[I very much question whether we ought to let up on fighting these comb-honey lies. By our persistent warfare it has come to pass there are quite a number of publications that are now posted, and will never more allow any such nonsense to get into their columns. No, sir, 'e, let's keep up the fight.—Ed.]

CLEANING SECTIONS; KNIFE BEST IN WARM WEATHER; SANDPAPER IN COLD.

For removing the roughest of the propolis, or for cleaning sections in warm weather, there is probably nothing better than a common steel table-knife with the blade cut off square two and a half or three inches from the handle. With this, one may become expert, and handle sections very rapidly. Take the section flatwise in the palm of one hand, and the knife in the other hand; and, by turning the wrist, clean the top and the edges on one side all the way round. Then turn the section over, and in like manner clean the bottom and other edges, and the job is done. There is no need of turning the section over half a dozen times to find all the edges.

For finishing, and for cleaning sections in cool weather, the best device I have yet found is a sheet of coarse sandpaper, about 9×11 inches, tacked to a board. The board should be placed at an angle so that the dust from the propolis will not remain on the paper. If the weather is cool, a single sheet will serve for cleaning hundreds of sections, making them bright as new. For beeway sections a strip of wood about a foot long can be made to fit into the beeways, and then nailed to the board and covered with sandpaper.

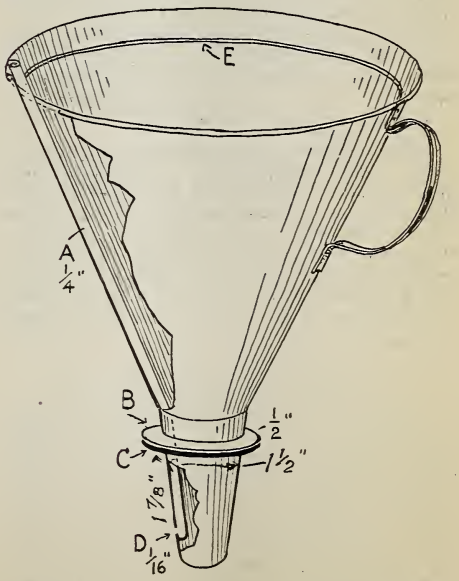
Another good device is a piece of board two inches wide and ten inches long, with sandpaper wrapped tightly around it and fastened with tacks. This is to be used by being held in the hand while the section is laid upon a board or table.

E. S. Miller.

A HANDY FUNNEL FOR FILLING SQUARE CANS WITH HONEY.

I send you a drawing of my automatic funnel which I have used for filling square cans with honey. Its use prevents the overflow of a can, in the way I will describe.

B is a metal flange supporting the soft-rubber washer C, which seals the top of the can so that the air in the can may be expelled only through the opening D into the ¼-inch tube A.



To use the funnel, set the faucet or gate so that just so much honey flows as will run through the funnel. As soon as the honey in the can reaches the hole D it closes the same, and the honey will rise in the funnel to a certain mark, E, when it should be shut off. Then raise the funnel to let the honey out into the can, which will then be within ¼ inch of the screw-cap.

If one wishes, a little whistle can be put on the vent-pipe so as to make some noise until the air is shut off below; but after using it that way I left it off as unnecessary, for I could hear the air escape anyhow.

Pomona, Cal. M. R. KUEHNE.

[I was thinking I had seen this idea somewhere before. While I believe friend Kuehne was original, so far as he was concerned, in the use of the air-tube in the funnel, the same principle has been in use for some time. Only yesterday our gasoline-man filled our square cans with a funnel of practically the same construction as the one shown here. It had a whistle on the top of the tube so the alarm could be given at the right time. Whether the idea is new or old, there can be no doubt that such a funnel would be far more serviceable than the ordinary ones without the air-exit tube.—ED.]

FREQUENT HANDLING HASTENS GRANULATION.

After your report of the graining of the sample of honey in the factory window last year I went to work to discover the cause. I took several samples from the original lot in the bee-house, and subjected them to frequent disturbance by changing about and handling, subjecting them to about the same treatment as the sample sent you would be. Every sample so treated grained more or less during the season, while the rest, left undisturbed, remained clear and perfect.

The result of this experiment I consider of great importance. It is so to me, at least, and I report it to you without comment. H. R. BOARDMAN.

East Townsend, O., Feb. 13.

[There can be no doubt that frequent handling hastens granulation. There have been many reports that go to show that; but in the case of the sample you sent here, and which was left on our window-sill, the bottle, after it reached us, was put on the window-ledge, and was not touched during all the time we had it, but once. The condition of the honey was noted by looking through the window.—ED.]

KEEPING BEES IN AN ATTIC.

I have an upstairs in my house, that I am not using. It is of the 1½-story cottage plan, and has plenty of windows for light and ventilation. What do you think of the idea of placing my bees up there and following the suggestion of Mr. Doolittle, on page 132, with reference to approaches? My home is in town, and my lot is small; so if I could place them there it would annoy my neighbors less, and leave me more garden space below. When would be the best time to move them? (I can front my hives either east or south.) CHAS. M. GATES.

Girard, Ill., Feb. 6, 1905.

[You can keep the bees in the upstairs part of the house; but arrange it so they can have a flight, either through the window or through a hole in the wall. This would be practically a house-apiary on a small scale. In view of your limited room I think you will find the plan will work very well.—ED.]

DEAD VIRGIN QUEENS IN JANUARY; WAS IT SUPERSEDURE?

I was looking over the hives to see how many dead bees they had carried out, and found one that had the entrance clogged with dead ones. I ran a wire far back into the hive to clean it, and out came a dead virgin. I raked again, and out came another, so I was satisfied they had superseded the old queen.

I have been in the bee business for six or eight years, producing honey and raising queens, but I have had no experience in bees superseding in January. Please tell me whether the queen in this hive will get fertilized. H. A. ROSS.

Evansville, Ind.

[The probabilities are that the old queen was superseded some time in the fall. It being late, the virgins could not be fertilized. If you look further you possibly will find another virgin which, on the principle of the survival of the fittest, killed the other two, as only one queen would be allowed in the hive. If present she may have been fertilized, and will begin laying some time in the spring.—ED.]

WHAT TO DO WITH UNFINISHED SECTIONS.

I find that I have on hand six supers with partially filled sections. Will you kindly inform me as to what is the best use to make of these? A. J. WARNER.

Elmira, N. Y., Feb. 13.

[I would advise placing the unfinished boxes over strong colonies, letting them carry the honey down into the brood-nest. But a quicker way to clean them up is to set them out in a stacked-up hive 200 or 300 yards from the yard, closing the entrance so only one or two bees can pass at a time. The bees will very soon rob them out, cleaning the combs perfectly. If the sections are then leveled down with a comb-leveler you will find them very serviceable for baiting in your regular section-super in connection with other sections of foundation. Indeed, the bees will occupy such sections much sooner than foundation; and in a light honey-flow they will fill them when sections containing foundation would be little more than drawn out.—ED.]

DOESN'T LIKE HOFFMAN FRAMES; HARDER WOOD, ETC.

My objection to the Hoffman frame is that you must lift out the division-board, and come right straight up in the eight-frame hive, or a frame in the ten-frame hive, and in most hives this is by a tight squeeze that you succeed, and especially so when you use as light a frame as the average factory-made one.

I have handled almost all the different styles of Langstroth frames, and I like the loose or unspaced thick-top-bar frame best of any. I also want them to be made of ½-inch lumber, using a much larger nail than is commonly used. I like the Hoffman frame when I go to move hives, frames, and all, but not when I move the frames alone. The old-style thin top-bar is not as good as the Hoffman; but when one lives in a place where propolis is plentiful, don't give him the Hoffman.

If you would like to experiment a little, just try some harder wood than pine for a top-bar, and you will be agreeably surprised for many years, for these same frames will hold nails better than pine, especially white pine. I like a basswood frame better than pine, and poplar is still better. Also try nailing your bottom-bars to your end-bars by nailing them through the edge of the end-bars, and crosswise of the frame, end-bar, and bottom-bar. J. A. BEARDEN.

Harms, Tenn., Feb. 13.

HOFFMAN FRAMES; SHORT TOP-BARS AND V EDGES PREFERRED.

I consider the Hoffman the best for my use. I have tried a number of different makes but am discarding all but the Hoffman. I also think the V edge is all right, because, first, it retains the spacing better; and, second, because they do not kill the bees as do the square-edged ones. The difference in bees probably would not amount to a great deal, but the extra stings are quite an item.

Again, I would not have a frame that comes clear out to the end of the hive. In cool weather they always come loose with a snap, which, unless accompanied with a cloud of smoke, means more stings. I might state that I never use a veil, as it obstructs my vision. I think if those parties who advocate long top-bars would properly staple their frames they would get along all right with them as they are. Another thing is, if a hive warps to such an extent as to make a long top-bar necessary it had better be fixed or discarded, because in a short honey-flow it is a nuisance on account of robbing, and in a good one it will be filled with burr-comb wherever the space is wider than it should be. JOHN W. SCHLENKER.

Ankeny, Ia., Feb. 14.

A FOUL-BROOD BILL FOR CONNECTICUT; BEE-KEEPERS OF THE STATE URGED TO WRITE TO THEIR LEGISLATORS.

I have introduced into the General Assembly of this State a copy of the Wisconsin foul-brood law, the disease having made its appearance in this vicinity.

I should appreciate it very much if you would call the attention of the bee-keepers of this State to the matter, and ask them to write to their Senator and Representative, urging its passage.

STEPHEN J. GRIFFEN.

Bridgeport, Conn., Feb. 9.

A PRETTY APIARY IN YORK STATE.

This is a part of my apiary. On the left is an ash-house, while on the right, out of sight, is my home. The apple-tree touching the side in the background is in a young apple

orchard. In the distance is second-growth hemlock and basswood. You can see the bees on part of the hives, and apples on the trees. E. M. LAWRENCE.

Mayfield, N. Y.

TO PREVENT BEES FROM MIXING WHEN SETTING OUT.

In the spring when setting my bees out of the cellar, they mix so badly that some of them are almost depopulated (the thermometer registering 60 or 70 degrees in the bee-yard). They are put out about the middle of April. They come out with great fury, and my loss is very heavy some springs because they mix with other colonies.

SETH DOAN.

Molesworth, Ont., Jan. 25, 1905.

[Set them out toward night—too late for them to fly. In the morning they will have quieted down. It may be advisable to set a part of the bees out at one time and the rest at another. By practicing both plans you will probably have no trouble.—ED.]

PUTTING UNFILLED SUPERS BENEATH THE BROOD-CHAMBER.

Last fall, after extracting in the summer from my four colonies of bees, there was a lot of honey in the supers; but I did not have an extractor, and there was not enough honey to pay for the trouble of borrowing one, so I put the supers under the brood-chambers (my idea being to hold the heat to better advantage). Now suppose I find that honey candied in the combs in the spring, what can I do to save the honey and combs, or at least the combs? Was this a good plan? A. J. SULEM.

Payette, Ida., Jan. 20.

[Soak the combs in warm water over night, and then give them a whirl in an extractor. But you have no extractor. Well, set one down in the center of a brood-nest when the queen is laying well. Better get an extractor.—ED.]

Blessed is the man whose delight is in the law of the Lord.—PSALM 1: 1.

Some of my critical friends will tell me, perhaps, that my text is not in the Bible, and no doubt some of you will get your Bibles and turn to the first Psalm to see where I have blundered. In fact, Mrs. Root herself said, when I told her what my text is to be, that I did not get it right. But I insisted then, and I do insist now, that the first and second verses of the first Psalm read, "Blessed is the man whose delight is in the law of the Lord." By the way, what a beautiful thought that is, any way! That word "blessed"! how grandly it expresses the thought! "Blessed" does not mean that the man shall be successful in business. Later on it says that whatsoever such a man does shall prosper. But it is worth a thousand times more to be "blessed" than to have the wealth of Solomon without the blessing. And that word "delight"—what a bright picture that is of a real sincere godly man—one who is a Christian through and through! Do you say there are none such nowadays? O my dear friends, you are mistaken. There are many people whose actual delight is in the law of the Lord; yes, and people who meditate on this law day and night. Of course, they are human like you and me, and subject to selfish impulses now and then; but we must make allowance for them. Even the great Father himself "knoweth our frame that we are but dust." But if we continue to delight in his law, and meditate on it day and night, the Holy Spirit will help us to get out the remnants of self and selfishness.

I have talked to you, dear friends, a good many times of late about the great achievements the world is making. I need not go over the list again. You remember all about it, especially when my talk culminated in flying-machines. Well, I think I have before said it made me feel sad to think that there did not seem to be a like progress made in spiritual matters. We have a great lot of wonderful inventions—yes, startling ones—but no invention to make men honest—I mean honest of their own accord from within. Why, it seems almost the other way. The more great discoveries God permits us to make, such as getting oil out of the ground, lightning out of the sky, or, perhaps, more properly speaking, from our great waterfalls; telegraphing without wires; light, heat, and power without consumption of material (radium) with all these things there seems to be no growth in that direction—that of being fair and liberal to our fellow-man. Why, these great inventions have actually furnished the means to *help* men to grasp, and grind down their poorer neighbor.

When I was out in Arizona I told you about a river called the Hassayampa. Well, it is said that the man who drinks of the waters of that river can never tell the truth afterward. In reading the great dailies, one can imagine a great lot of us (yes, I mean *us*) had been drinking of the waters of this remarkable Hassayampa. Now, then, friends and neighbors, if we could only discover a river somewhere in the wilds of Africa or the great West, with waters of such virtue that those who drink of them could never tell an *untruth* afterward, what a glorious thing it would be! and, may the Lord be praised, we have got a *glimpse* of that very river, even if it is not as yet found here in the United States. I have caught a glimpse of it, and I hope that it has filled me with more entnusiasm and joy than even the flying-machine. But I am not done with the flying-machine by any means. Perhaps we shall have both right along together.

Well, the glimpse of this river came to me through a tract. I wonder how many of you throw away the tracts or shove them into the waste-paper basket without having read them—these tracts that come floating through the mails. Sometimes I have been tempted myself to say, "I wonder if these well-meaning people have an idea that I have no other business than to look over the piles of tracts they send me." Well, I did not say it, and I am glad; but I did say, "God helping me, I will try to give a reasonable amount of time to every tract or circular of any sort that somebody thinks best to send to me." I am very glad now that I adopted the latter plan, for I have in this way gotten hold of some wonderful gems, at least they are such to me, not only in spiritual matters, but in science and rural industries, agriculture, etc.

This tract which I wish to review especially just now is a description, by the Rev. G. Campbell Morgan, D. D., of the Welsh revival. It is a sermon he preached in Westminster Chapel, London, last Christmas day. It describes a visit of his made about that time. I do not know what has been done through January and February in that line of work, but perhaps some of our readers can tell me more about it. You have doubtless heard more or less about the wonderful Welsh revival. Let me tell you briefly what I get from the tract. These revival meetings are kept up two or three hours at a time. Now, do not express disgust because you find it hard to sit in church for one hour or less. In this new form of revival the people do not all go at once and stay till the meeting is out. They are coming and going. In that respect it is probably something like the noonday services in many of our large cities here in America. There is no evangelist and no minister. Evan Roberts has, of course, had much to do with this revival, but he occupies comparatively little time. Their meetings are not in any one particular locality. Dr. Morgan says if one could be up the air and get a glimpse of the places where revival meetings have started

it would be something like little fires breaking out here and there, first in one locality and then another, and oftentimes in localities so far from each other that one can hardly see how the influence has gone from one church to another. In one sense the meetings are a scene of disorder; and in another sense they are the most quiet and orderly meetings ever held. The time is all occupied by singing, praying, and personal testimony. Dr. Morgan says the only break he noticed in the first meeting he attended was when somebody who happened to know him asked to have him speak, and this interrupted the work that was going on to such extent, in his opinion, that he then and there declared in his own mind he would not go again unless they would permit him be just one of the audience.

Well, there is not only a constant succession of singing, praying, and speaking, but there are interruptions. While somebody was praying, somebody else would break out in song. Then the song would be interrupted by prayer. While somebody was giving personal testimony, however, I think there was seldom an interruption. There is no human leader. There is no instrumental music, and, lastly, there are *no hymn-books;* and yet they sing old well-known hymns through from beginning to end. Very often the one who starts a hymn does not know more than one verse, but somebody else does; and under the influence of the Holy Spirit they almost sing hymns they do *not* know. No wonder Dr. Morgan said it was like men speaking in unknown tongues on the day of Pentecost.

I have not space to go into the details, but I am going to tell you a few of the most wonderful things. A business man was present in one of these meetings. He had been for years teaching a class of young men in Sunday-school. He had prayed for their conversion, but he was one of the kind who find it very hard to have personal talks with people. While in one of these revival meetings his eye caught sight of one of these young men. While he was thanking God that at least some of his boys were attending the services, something prompted him to go and plead with the young man. He did so, and in a few minutes this youth arose in meeting and gave himself to Christ. Then he with his teacher sought out another one of that class of eighteen, and he too rose up, acknowledging the Savior, and before long the whole class of eighteen had enlisted for life as followers of the lowly Nazarine.

Such stories seem strange and incredible, but their truthfulness can be attested by hundreds of people. Like Jesus' work here on earth, none of it is done in a corner, but out in open day in the sight of all men.

A business man who is a professing Christian got to thinking about an intimate friend of his with whom he had had close business relations for years, but had never mentioned the subject of religion to him. One morning during these meetings he went to the office of this friend and boldly announced that he had come to talk with him for once in his life on something that was not business. This friend smiled in a peculiar way, and finally said, "Mr. A, let me explain to you why your call has given me wonderful pleasure. Last night I could not sleep. I was thinking of these revival meetings and of my duty to my fellow-men and to my Savior and my God. My conscience troubled me, and I got no rest until I arose from my bed and on my knees asked God to forgive me and take me for the rest of my life into his care and keeping. This morning I was longing to talk with somebody about the new departure I was about to commence; and as I know you so well I would rather talk with you about it than almost anybody else."

Now, friends, is not this a wonderful example of the way in which the Holy Spirit comes simultaneously into the hearts of men? It makes one think of when Ananias was bidden to go and talk with Paul. Dr. Morgan says that at one of these meetings he stood for three hours so solidly wedged in the crowd that he could not even lift his hand. Every little while during the services somebody either announced that he had come out for Christ Jesus or that some friend had given himself to the Savior as a ransomed soul.

Now, this story of mine does not amount to so very much until you take into consideration the fact that *20,000* people united with the different churches of Wales in just five weeks of this revival, and this report was made last December. Where did this new movement start? Nobody knows. It did not start with Evan Roberts—at least he says so. Some say it started at an Endeavor meeting. God bless the Endeavorers! And, by the way, Dr. Morgan tells us that such a great thorough change would not have been possible were it not for the fact that the good people of Wales have been for a long time back attending faithfully their various religious services. The Endeavor meetings had taught the people, young and old, to become so familiar with Gospel Hymns it was not so very strange they could keep up the praise meeting without books or organ.

The revival is not confined to people who attend church—it is in the air; it is all over. One of the preachers who had been assisting in the work confessed that he had been carrying a sermon for three in his pocket. The sermon was not needed.* One new convert from a factory said, after his conversion, "Tell all the men—tell all you meet, that I am converted." There was no backwardness nor diffidence about such a conversion.

* Do not imagine for a moment, dear friends, that either I or Dr. Morgan means to intimate that ministers are not needed. Unless the pastors of the churches where these new converts are taken in follow them up and keep the hold of the church upon them, a great part of them, at least, will go back. It may be we shall not need so many long sermons; but the pastors of all the different churches are going to be needed more than ever before since the world began, in order to hold what we have.

What does it all amount to? you may ask. Well, vicious men have stopped swearing; stopped beating their horses; cruelty to animals and swearing are out of fashion; better yet, men as fast as they are converted go to paying up their old debts; to making friends with those with whom they have quarreled; and where there have been differences in deals each side vies with the other in showing a liberal spirit and in bearing more than his share if necessary. One can not help saying as did Nicodemus when he met Jesus by night, "Rabbi, we know that thou art a teacher come from God; for no man can do these miracles except God be with him." And no man who sees this work of grace going on in Wales can for a moment doubt that it comes from God.

The tract* concludes by saying, "Can we copy their method?" Dr. Morgan would not undertake it. Do we need to go to Wales to learn how? Not at all. It is God's work. All we can do is to be ready and to fall in line and help it along when it comes near us—to be, as the Bible expresses it, like clay in the hands of the potter, and let the Holy Spirit fashion us.

Now, friends, I leave it to you. Am I not right in saying Wales is giving the world a glimpse of this wonderful river that makes men honest? Oh that our millionaires, the men who are managing our great trusts, could get a glimpse and a good big drink of these living waters! that they might of their own accord heed the promptings of the Holy Spirit within their own hearts, and cease oppressing their fellow-men — cease coveting "the whole earth," and delight in helping along our great industries, with their hearts overflowing in Christian love for every one of their fellow-men, whether he be in their own line of business or some other. God hasten the day!

We have just had a Sunday-school lesson about Jesus' talk with the woman at the well, wherein he said, "Whosoever drinketh of the water that I shall give him shall never thirst."

In the above beautiful words spoken by the Master to that Samaritan woman, there is, it is true, nothing particularly said about his followers being truthful and honest, and fair in deal; but would not this, as a matter of course, be included? And is it not true, as in the figure I used in the fore part of my talk, that whosoever drinketh of the water that Jesus gives shall be, in the very nature of things, unable to tell an untruth afterward, knowingly, or to be unfair or unjust with his fellow-men? If this is true, shall we not all say, in the language of that poor sinful woman, "Sir, give me this water that I thirst not, neither come hither to draw"?

* The tract I have been describing has 16 pages, and is furnished free of charge to all. Address A. P. Fitt, 250 La Salle St., Chicago, Ill. If you feel inclined to help bear the burden of printing these tracts, sending them by mail, etc., you can also send some stamps or money, just as the Holy Spirit prompts you to do, to the above address.

SWEET CLOVER, NITROGEN NODULES, ETC.

Just now the government and a good many other people are waking up to the great value of sweet clover through some unexpected developments in the nitrogen-nodule business. The information comes through our agricultural periodicals, and from those who are not bee-keepers and in no way interested in the honey business. Sweet clover has shown itself to be one of the readiest plants to get hold of the bacteria and produce nitrogen nodules. Dig up a sweet-clover plant in any vicinity and you will probably find them in plenty. If not, treat the seed by the government formula, and see how quickly it takes hold of it. Now, it has been commented on again and again for years through our bee journals that sweet clover thrives where no other plant will grow—barren hillsides, railroad embankments, along roadsides, etc. Why will sweet clover thrive where no other plant will grow? Perhaps nobody ever thought of it, and I did not until I noticed the way in which the new developments were running. Why, bless your heart, friends, sweet clover gets its fertility by getting *nitrogen from the air*. It does not seem to care whether there is any fertility in the soil or not. In fact, it rather seems to prefer barren soils providing the ground is well drained, either naturally or artificially. Now, the next refreshing point is that the bacteria that come from sweet clover are so nearly allied to that from alfalfa, its near relative, that they work interchangeably; and one of our agricultural papers suggests that the quickest way to get these bacteria into the soil is to start with sweet clover. You may remember that I wrote up the fact while in Salt Lake City and that region, that sweet clover has the remarkable property of sweetening their bad alkaline soil so that the ground will produce any other crop. We have not heard very much of late in regard to sweet clover being a noxious weed that cattle, horses, pigs, etc., would not eat.

Just one thing more: You may remember that the Ohio Experiment Station stated a few years ago that a moderate growth of sweet clover plowed under produced a wonderful effect in increasing the crop of wheat that was put in the ground afterward. The sweet clover was on a streak running through the field. Where it grew, the increase was away ahead of that on the remaining part of the field.

There is one queer trouble with the sweet clover, however. It seems to be a difficult matter to get a good stand of it on most soils. Where it goes to seed, and the seed drops on the ground and springs up itself, it comes up with rank luxuriance, covering the ground with a heavy crop. But when we

prepare our ground carefully, and sow the seed in the way we sow other clovers, there seems to be trouble in getting a uniform stand. Will those who have had experience kindly let us know about getting a stand by sowing the seed? We have not had any reports along that line very recently.

Perhaps I may remark that the government has just sent me a package of the "culture," sufficient to prepare an acre for alfalfa. The bacteria-infected cotton could be put in one's vest pocket without any trouble. The chemicals that go along with it would probably go in the other vest pocket if it is a pretty good-sized one. See page 140, Feb. 1, and 261, March 1.

LONG-RANGE WEATHER FORECASTS; FAKE ALMANACS, ETC.

The Weather Bureau informs us that the present month of February so far (the 20th) is the coldest on record for the past 34 years. May I ask once more why the weather-prophet did not tell us, when he made his almanac, that this would be the case? If he has foreknowledge, divine or otherwise, he certainly must have noticed that peculiarity of February. If his friends urge that he can not tell about *temperature* they will also have to admit he can not tell us about dry weather either; for he did not say that last November would be the dryest November all over the Northern States since the Weather Bureau was started. Now, if he can not tell dry weather in the future, or extreme cold either, what does he tell us? Storms and tornadoes? Very likely; for he and his satellites can hunt up a storm, and perhaps a tornado, every week in the year by hunting the country over. Such things go by localities more than dry weather and low temperature. That excellent periodical, the *Country Gentleman*, has just been giving us some good articles on this subject; and I entirely agree with them that it is a disgrace to the science and civilization of the present day that there are even a *few* people defending "the St. Louis astrologer," as they justly designate him.

Since the above was written I have received from the Weather Bureau a very interesting bulletin of 68 pages, entitled

LONG-RANGE WEATHER FORECASTS,
Prepared under the Direction of Willis L. Moore, Chief U. S. Weather Bureau.

This bulletin sums up the work of all the weather-prophets, and tells me something I did not know before—that our U. S. Weather Bureau has carefully examined the claims of all these weather-prophets, and with its vast information regarding the weather of the whole United States it has been enabled to say better than any individual could possibly decide, whether there was any possible chance to claim foreknowledge. In regard to the St. Louis astrologer, or at least I suppose they mean him, they write as follows:

Aside from platitudes regarding average weather conditions that prevail in April, he announced that—

"One of the most decided, and perhaps violent, storm periods of the month extends from about the 25th to the 29th."

In the United States the period was a quiet one, and the disturbances that appeared (and one or more surely would appear within the area of the United States during the period specified) were not attended by "very general and violent storms, destructive hailstorms, and abnormal downpours of rain," which, according to the detailed forecast, should have been experienced.

His forecast statement for May, 1904, ends as follows:

"The fifth storm period will be central on the 29th, and there will be violent disturbance. Watch the barometer, and if you have a trembling wife and children clinging to you for protection, provide some place of safety in which to resort in case of danger."

Is it possible to soar to greater heights of nonsense? In what particular continent or country will the storm period be central on the 29th? Is the entire population of the United States, or of the world, expected to dig cellars or caves of shelter in anticipation of a possible occurrence of a tornado whose path of destructive violence would not cover an area represented on a large map by a mark one-half an inch in length made with a sharp pencil? Is it possible that a man who issues such totally unwarranted, sensational, and harmful forecasts is seriously considered by the intelligent portion of the American public? I regret to say that he and others of his kind have a considerable constituency.

DUFFY'S MALT WHISKY—MORE ABOUT IT.

A. I. Root:—Enclosed I send you an ad't, cut out of the Sioux City *Journal*, of Duffy's malt whisky, recommended by a minster of the gospel, thanking God for such a medicine. Dear Bro. Root, do you think there is a minster of Christ thanking God for Duffy's malt whisky? or is this a fraud such as you exposed last summer in case of the old German?

Vermillion, S. D., Jan. 9. E. A. MORGAN.

Friend Morgan, I should say without hesitation that the testimony from this minister is a humbug. It ought to be called forgery. We have not investigated this case, it is true; but several others were followed up by temperance people, and it turned out to be a pure forgery. The man 107 years old never heard of Duffy's malt whisky—never tasted it in his life. In fact, he is a German and does not speak English; yet the Duffy people printed a letter from him in English and signed his name to it—see pages 617,769, last year. Another, a woman, over 100 years old, gave emphatically the same testimony. They sent both parties a case of whisky as a recompense for forging letters and forging their name. But the old people had no use for it, and did not know what to do with it. I forwarded the above facts to the Department, Washington, D. C., asking if something could not be done to stop such broadcast forgery of letters with good people's names attached. They replied in both cases with a printed sheet, saying that, unless I personally had been injured, or had lost money by the parties mentioned, they did not know how they could do any thing with them. If every periodical in our land would show up this rascality (to call it by no worse a name) it might prevent innocent unsuspecting people from trying whisky as a medicine because ministers of the gospel and people over a hundred years old recommend it. Everybody should help expose whisky frauds of this character.

The Woman's Christian Temperance Union wrote to two if not more ministers who had given them testimonials. One said it

was an out-and-out fabrication. The other was from a man who used to preach, but is now an imbecile. They took advantage of his infirmity, and got his consent when he did not know what he was talking about or what they wanted.

CONTINUING PERIODICALS WITHOUT HAVING ORDERS, FROM THE ONE WHO SUBSCRIBES, TO KEEP THEM GOING.

A few days ago the following letter was handed me because I have expressly requested to see all severe criticisms in regard to the way The A. I. Root Co. does business:

Gentlemen:—Last spring, when I received a sample copy of your journal, I was pleased to see you agreed to stop it when my time was out, and my subscription was sent in in good faith, and a request to be sure to have it stopped; but, lo! not a stop. Now I suppose it will take months to stop it, but I am equal to the occasion. I never have failed yet, and I will succeed in this. I do not allow any paper or magazine to come to my address unless it stops as soon as its time is up for what I have paid for. I consider it a sneaking way to get my patronage to continue to send me your paper or journal contrary to my orders, regardless of its value, and I will lend my might to persuade all to shun all literature that does not stop as soon as time is out. It will grace the roadside by my mail-box from now on, and passers-by would learn the cause. It will be explained as a creeping, sneaking nuisance. ROBERT GREEN.
Earlham, Ia., Jan. 5.

Just as soon as I went over the above I called for his former letter where he ordered GLEANINGS, and here it is:

Gentlemen:—Find 25 cents in stamps inclosed for six-months' trial subscription to GLEANINGS. Stop at expiration unless otherwise ordered. ROBERT GREEN.
Earlham, Ia., Mar. 28.

You will notice that our vehement friend sent only 25 cents for a six months' trial subscription. He does say in his letter, "Stop at expiration," and I am very sorry to say that the young lady who attended to the subscription, for some reason I can not explain, failed to put on the mark, "To be stopped at the end of six months." She is a comparatively new clerk; but I think after this she will not be likely to overlook this part of her work.

Now, our friend is unduly vehement, and certainly it is very unreasonable to write such a letter as his first one before he had politely asked for an explanation. But his letter seems to indicate that he has had trouble before in getting periodicals stopped when the time was up; and from what I read in different publications I am inclined to think there *are* periodicals the publishers of which try to force them on the people at large; and the worst part of it is, that, after having done so, they hand accounts over to various collection agencies which, it seems, get quite a little money by frightening good people into paying for something they never ordered and did not want. I explained the matter to friend Green, and asked him if he did not owe us an apology, but I have not received one yet.

And now let me say, as I have been saying all along, that, while it is true we continue our journal without orders, where parties do not say any thing about having it stopped, it is also true we never expect anybody to pay a copper for GLEANINGS that was sent without orders and was not wanted. In other words, if we send it without orders it is our loss and your gain unless, when the circumstances are explained to you, you decide it has been of some value in your home and family, and therefore you can afford to pay us something for it.

HATCHING HENS' EGGS IN A BEE-HIVE.

I suppose the story is still going the rounds of the press. One of our subscribers sends us a clipping containing a picture of some hives. One of them has the cover removed, showing the eggs in place under the chaff cushion. We can not tell the name of the paper from which the clipping was made. It reads as follows:

FARMER FINDS BEE-HIVE GOOD INCUBATOR.

The common honey-bee is the latest kind of an incubator. That may seem a foolish statement, yet it has been practically demonstrated by an Ohio farmer. Hereafter the patient hen may have a rival in the industrious little insects, for they can be used to hatch hens' eggs as well as the most improved pattern of incubator.

What is more, the bees can outstrip the mother hen by two days. It takes the hen twenty-one days to hatch a setting of eggs. A colony of bees can do it in nineteen.

Henry Decker, an old resident of Rome, Ashtabula County, Ohio, is the first person to utilize the heat generated by bees in the hatching of chickens. He is able to hatch 100 chicks from 100 eggs in nineteen days.

Mr. Decker said: "I was transfering a swarm of bees one day, and noticed the temperature was about the same as I always had it for my incubator, so I got my thermometer and tested the heat that night.

"My wife wanted to know whether there was not another hen that we could set. I told her that I thought so, and I put twenty eggs in the bee-hive that night. I said nothing to any one, but waited to see what would be the result.

"In just nineteen days I happened around the hive, and heard a funny noise. Upon hearing it I found eighteen chickens out of the twenty eggs.

"Since that time I have tried different numbers of eggs, and have always done as well according to the number of eggs that I put in."

Mr. Decker has been deluged with letters of inquiry, requests for illustrative drawings, photographs, etc., but this is the first time that his likeness could be secured. He is in the act of removing the covering from the eggs inside the hive. The cover is an old chair-cushion. The eggs lie on a cotton cloth, which separates them from the bees. Another cushion made from a quilt, is placed around the edge. Mr. Decker has received letters from nearly every State in the Union, also from Germany and other foreign countries.

Among several communications in regard to the matter we give the one below. I have written Mr. Decker about his success, but have as yet received no reply.

HATCHING HENS' EGGS OVER BEES.

I have tried it once over a strong colony of bees, two thicknesses of burlap under the eggs, and over the frames a frame of common lath just large enough to rest on the outer edge of frames; burlap between the lath and eggs; a good big warm cushion nicely tucked down all the way around, eggs turned over every day or every other day. At the end of four weeks, not a chick; eggs were not even spoiled. I am sure it was not a good thing for the bees. Now, it seems as though the conditions were all right, except it was too early in the season for continued hot weather. I tried it in dandelion and fruit-bloom.

Eggs were always cold on top when I went to turn them over. If it happened to be cold weather I warmed a new cushion and changed the cushions. I presume it would work in extremely hot weather; but then I want the bees to work at something else.

Mt. Pleasant, Mich., Feb. 22. H. S. WHEELER.